

DL-2410

Service Manual

Oct 10, 2010

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Main technical specification

Print resolution (maximum)	525 dpi
Maximum print size	457x 608mm
Capacity	550 prints/hour (152x102mm)
Processing time	2' 45"
Light source	LED Matrix
Imaging unit	LCD
Lens	3 fix focus Lens automatically selected depend on print size
Network Protocol	TCP/IP
Colour management	Color under control system built in Linux Server (base on profiles)
Process	2’45’’ from dry to dry (CD: 30 second, BF: 30 second)
Working tank volume	CD: 11.5L BF: 11.5L STB1: 6.2L, STB2: 6.2L, STB3: 6.2L, STB4: 6.2L
Replenishing tank volume	CD: 10L BF: 10L STB: 10L
Paper width	89 - 457mm
Supported file format	Bmp, jpeg, tiff
Power supply	AC 220-230V, 50/60HZ
Rating current	15 A
Power	Maximum 7 KW
Weight	700kg (without chemistry)
Dimension	2480mm×800mm×1760mm (Length x Width x Height)

Explanation of manual

About the chapters

- 1. Cautions for work

  Contain information on how to achieve safety in service operations.

  Be sure to read precautions thoroughly and carefully.

- 2. Maintenance

  Contain items concerning maintenance necessary to make high quality prints.

- 3. Service

  Contain information for service personnel.

- 4. Electrical parts and wiring diagram

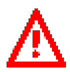
  Describe the sensors and PCB's used in this machine and the wiring diagram.

- 5. Trouble shooting

  Describe how to solve the troubles.

Symbols used in this manual

Definitions of the symbols used in this manual are as follow:

Symbol	Definition
	Warning symbol. Text following this symbol contains particularly Information concerning safety. Pay extra attention to this information.
	Important symbol. Indicates operation or procedures requiring caution, instructions which should be followed, supplementary explanations, etc.
	Reference symbol. Indicates the manual or section which should be referred to.
	Help symbol. Indicates functions or instructions which are convenient to know.

Abbreviations for processing solutions

The names of the processing solution in this manual are indicated as below. Some of types of processing solutions may have other names.

Processing solutions	Abbreviations
Colour developer	CD
Bleach Fixer	BF
Stabilizer	STB

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1

Chapter 1 Caution for work

This chapter contains information on how to achieve safety in service operations.

Be sure to read precautions thoroughly and carefully.

1.1 For safe operation

- **General precautions**

  Prior to any part replacement or mechanical adjustment, be sure the air brake is switched off.

  - Ground wires (green and yellow) are connected to the covers and units of the machine. For reassembly, be sure to connect the ground wires as they were.
  - Be sure to perform an operation check after replacing or adjusting any parts (or units).

- **Precaution against electric shock**

  - If any case you have to take care of wiring for the power such as moving the machine, ask a qualified professional electrician to do so. Do not forget to ground the machine.
  - Pay attention to avoid shocks when performing troubleshooting, wiring checking, or voltage/current measurement.
  - When replacing a fuse or PCB, be sure to switch off the air brake.

- **Precaution for operating rotary section**

  - Be careful with your hands, hair, clothes, etc., not to be caught under the gear, chain, belt, roller, fan and other rotating parts.
  - Do not remove the cover unless it is specified.
  - If your hand or the like is caught and you can not move, ask someone around you to turn off the air brake at once.

1.2 Countermeasure for static electricity when replacing and maintaining the electrical parts

If an electronically charged human body touches electronic parts like PCBs, it may adversely affect the electronic parts.

When handling the electronic parts, be sure to use static-dissipative conductive gloves to prevent the components on the PCB from being damaged due to static electricity.

The static-dissipative conductive gloves are included in the spare parts of your machine.

When using the static-dissipative conductive gloves, be sure to turn off the air brake and wait 15 seconds to carry out operation.

1.3 Handling chemicals

The work with the machine involves the handling of slightly poisonous, irritating and etching substances, to apart from these, the user must ensure sufficient aeration. The air in industrial workrooms should be exchanged at least 8 to 10 times per hour.

All photographic developers contain substances which may irritate the skin, the mucous membrane and the eyes and which may cause allergic skin reactions affecting very sensitive persons. For this reason, avoid long or repeated skin contact, especially with developer solutions.

For all jobs where photographic processing solutions may splash, e.g. preparing and filling in chemical solutions, cleaning processing racks etc.:

- Wear protective gloves; rinse all solutions that get on the skin with plenty of running water.
- Wear industrial glasses.
- Wash with soap and rinse with lots of water after completion of work.

Store chemicals and processing solutions in a safe place.

If a processing solution has been ingested accidentally, immediately rinse mouth with water, and drink 2 or more cups of water and induce vomiting. Contact a physician as soon as possible, and follow physician’s instructions.

If processing solution gets into eyes, immediately rinse them under running water for at least 15 minutes, and then contact a physician.

Processing solution stains on your clothing may result in discolouration or fading, when handling processing solutions, wear clothing for work wear.

Photochemical are not allowed to be drained off into the public sewage system! Please

obtain the information about the regulations in force about the handling and correct disposal of chemistry from the country's authorities in charge.

1.4 Storage

The chemicals should be stored and prepared according to the manufacture's information and advice.

All Colour papers must always be stored in a cool and dry place.

The best storage temperature is between 2℃ and 10℃.

Opened packages have to be stored at a relative humidity of 20-60%.

Storage at 20℃ over several days is possible without problems.

Storage temperatures above 30℃ should be avoided because they will cause visible alterations after only a few days.

2

Chapter 2 Maintenance

This chapter contains items concerning maintenance necessary to make high quality prints.

Prologue

For a steady-going machine and making high quality prints, maintenance is very important.

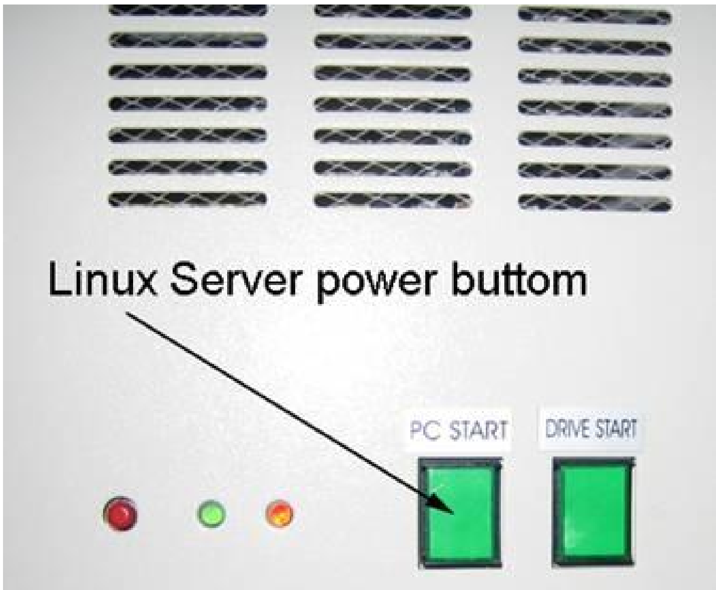
Maintenance needs to be performed regularly. Otherwise unexpected problems could arise and the lifespan of the machine could be shortened.

- **Daily maintenance**
    - Start-up the machine in a sequence.
    - Spray some fresh water on the upper rollers of the processing racks and the cross-overs.
    - Morning test for all the paper magazines
- **Weekly maintenance:**
    - ABCD calibration if necessary.
    - Change the STB water.
    - Clean the filters of the working tanks.
    - Clean the cross-overs.
- **Quarterly maintenance:**
    - Uniformity calibration if necessary
    - Twister 4 calibration if necessary
    - Twister 16 calibration if necessary
    - Clean the tanks if necessary.
    - Check the replenishing pumps, circulation pumps and the pipes to avoid potential chemical leakage.

Machine start-up sequence:

1. Turn on the Linux PC.
2. Turn on the Windows PC
3. Wait until the Linux PC start-up finish.
4. Turn on the Drive power.

Improper start-up of the machine could cause unexpected problems of the photos.


Linux Server power buttom
PC START
DRIVE START


PHILIPS
PC START
OK
Linux LCD Panel
Windows computer power buttom

2.1 Morning setup

Purpose: To compensate the colour deviation caused by changes of chemicals, etc., keep colour output stabilized.

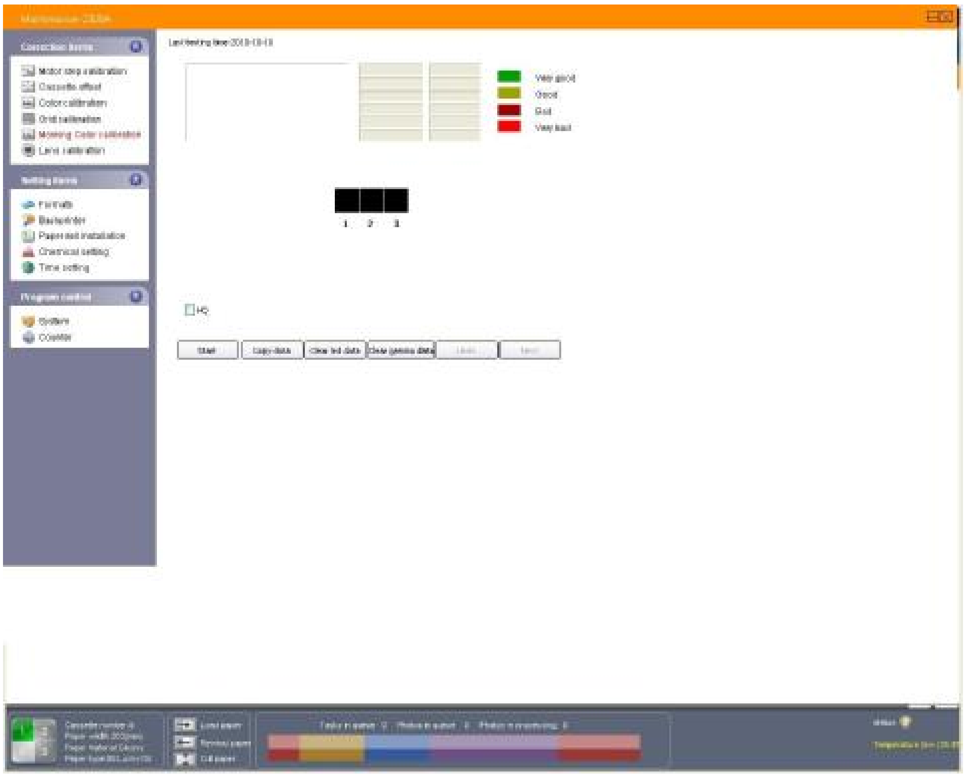
Precondition: Processing solution temperature has reached the set value.

There are two different morning setups, for normal format we simply take method A---4 times morning setup, for HQ format we take method B----16 times morning setup. (In factory, the default HQ format is over 8 inches).

Steps:

Method A

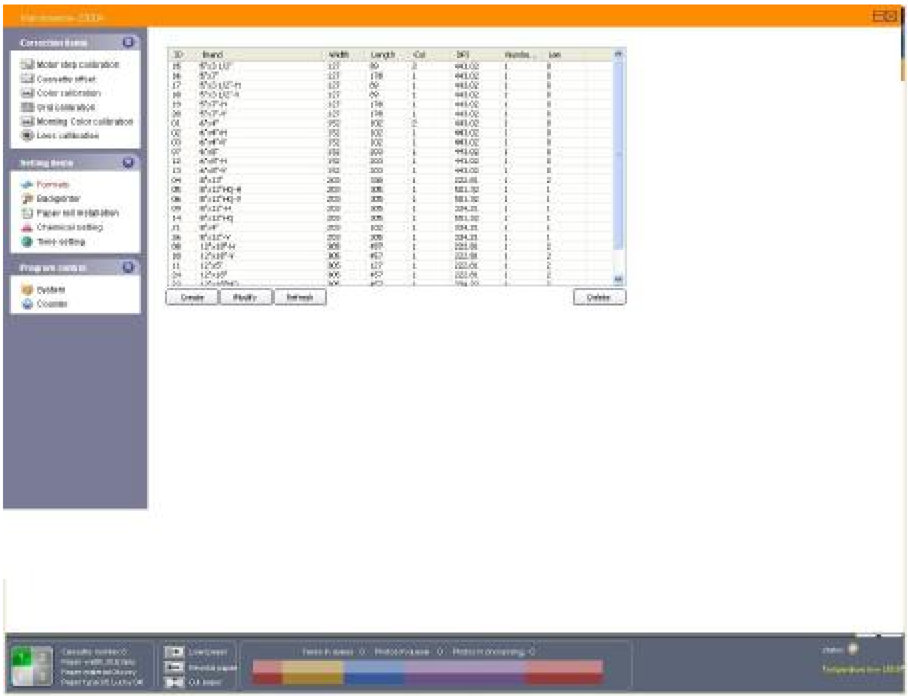
- Run **PhotoSmart**.
- Complete the **Morning Color calibration**.



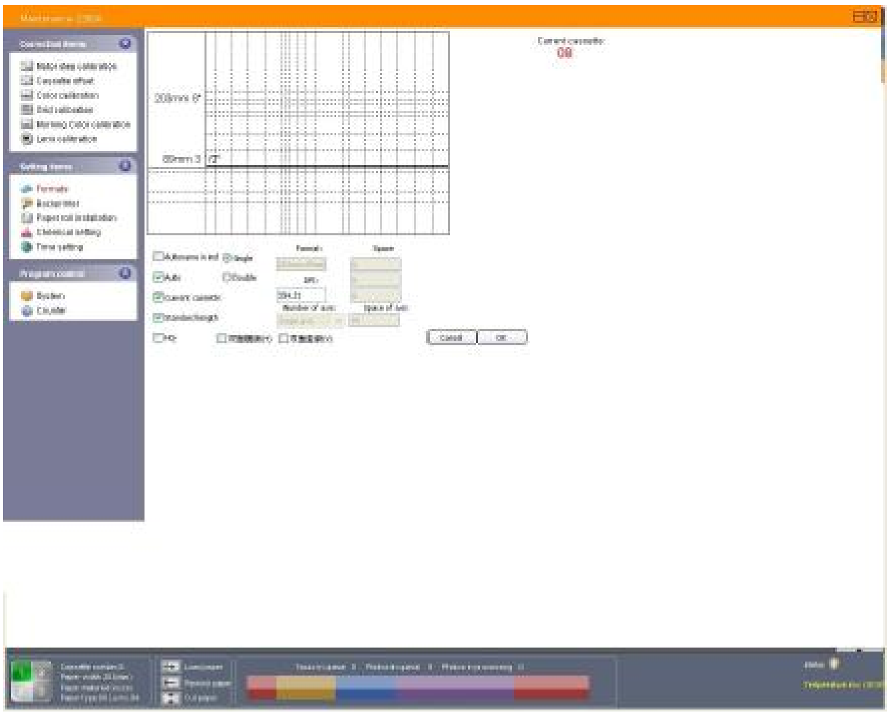
Method B

For HQ formats, you need16 times paper calibration, if you don’t have HQ format, first you need to create it (Refer to the following procedures).

- Run **maintenance** > **Formats**



- Click **Create**



- Select **High Quality** and click OK to complete.

Then you can do 16 times morning set up.

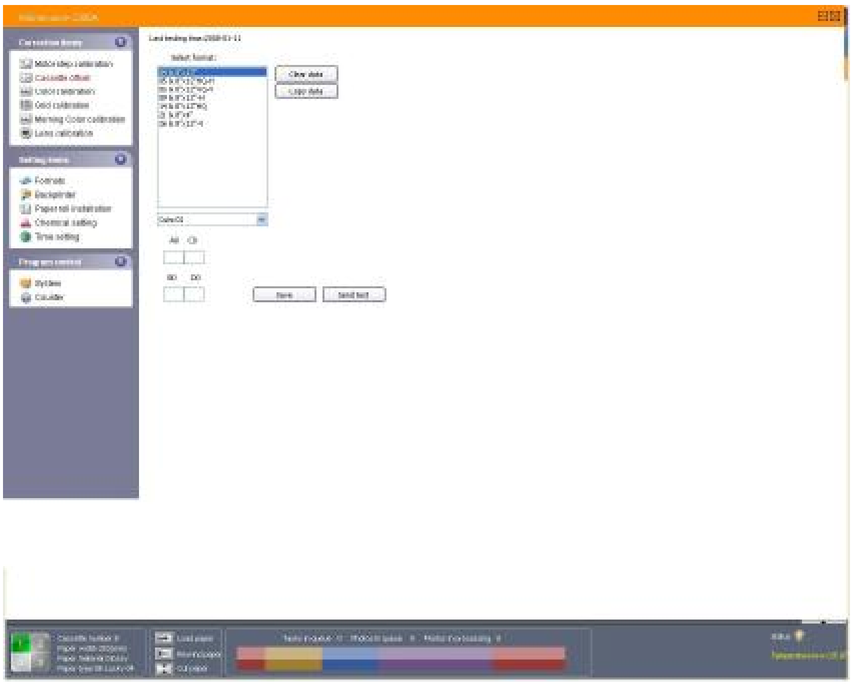
- Same procedures as regular format Paper calibration, you go **maintenance** > **Color calibration,** choose **'HQ'** and click **'Start'** to begin the calibration..

2.2 Exposure centre (ABCD) calibration

Purpose: To calibrate the image exposure centre of the photo. In the case white border appears on the photo, this calibration shall be performed for the corresponding formats of the photos.

Steps:

- Open **Maintenance**.
- Select **cassette offset**.
- Select formats and then click **Send Test**, then computer will send test prints for the formats you selected.
- After the test prints coming out, key in the **A0**, **B0**, **C0**, **D0** value of the test prints to the corresponding format's dialog box.



- Click **Save**, click **Send Test** again, repeat the above step, until the deviation of **A** and **C**, **B** and **D** value is within 2.

This calibration shall be done for each format and each cassette.

For example, if you have 2 cassettes with 152mm paper loaded which are cassette 01 and cassette 02, you will need to do this calibration for the 152x102mm and 152x203mm formats etc for both cassettes.

2.3 Double exposure centre calibration

DL-2410 does double exposure for 152x102mm and 127x89mm formats automatically. For a better understanding of double exposure, you can send 2 copies of 152x102mm format (152mm paper width) in **PhotoSmart** and then open the printer door to watch the exposure procedure.

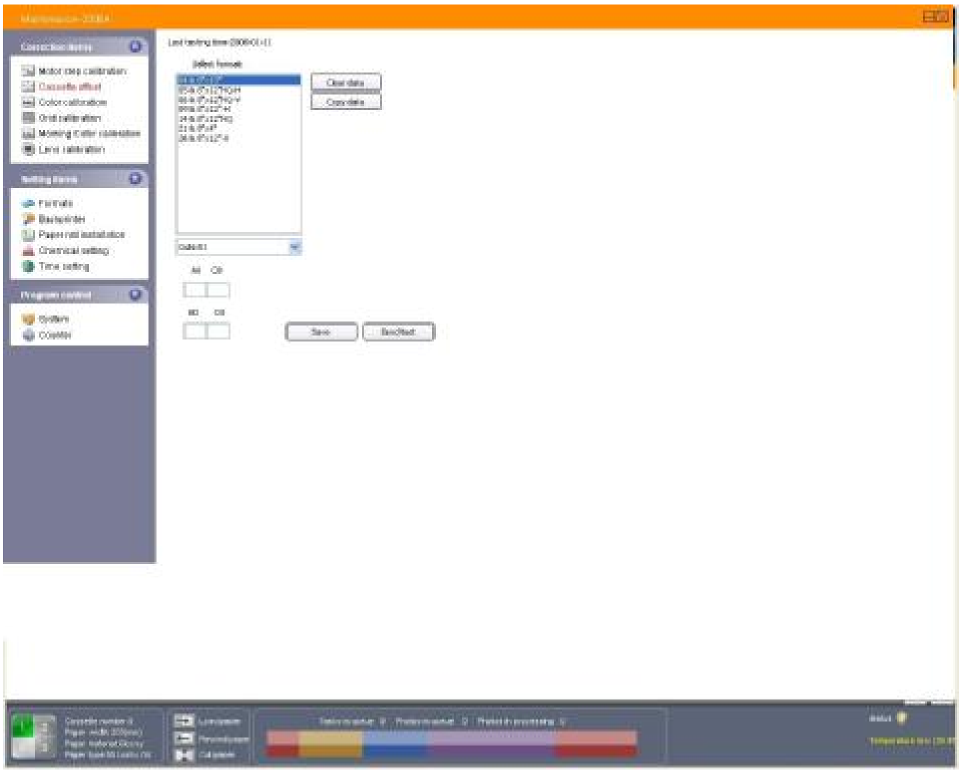
Usually this calibration has been done in the factory, no need to do again by the user.

Purpose: To calibrate the image exposure centre of the 152x102mm or 127x89mm photos which are printed by double exposure mode, this calibration shall be performed when white border appears on these photos while the ABCD calibration has been completed for the corresponding formats.

Precondition: The **ABCD calibration** has been completed for the corresponding format.

Steps:

- Open **Maintenance**, and then click **cassette offset**.



- Choose **'152x102mm or 127x89mm'** and **'Cuts: 02'**, then click **Send Test**.

The double exposure centre data is saved under the corresponding format ID in the Linux Registry, so we need to do this calibration for both 152x102mm and 127x89mm formats.

- After the test print coming out, select **1** in **Photo**, key in the **A0**, **B0**, **C0**, **D0** and **A1**, **B1**, **C1**, **D1** value of the test prints to the corresponding format's dialog box.:
- Click **Save**.
- click **Send Test** again, repeat the above step, until the deviation of **A** and **C**, **B** and **D** value is within 2.

If you have deleted the 152x102mm or 127x89mm format in Maintenance, the double exposure centre data of the corresponding format will be lost.

2.4 Temperature calibration

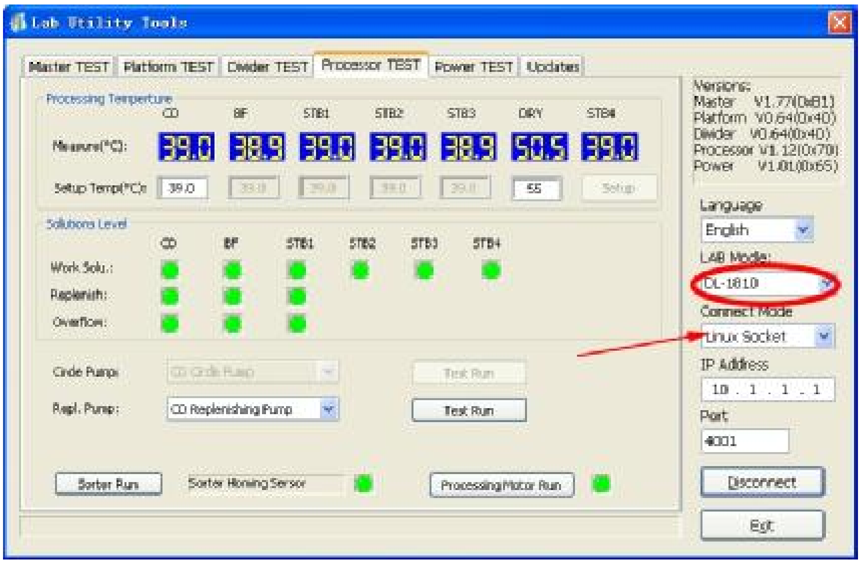
Purpose: To set up the temperature for each working tank according to the requirement of the processing solution, and calibrate the actual temperature of each working tank to be the same as its monitor display.

Precondition: The temperature of the processing solution has reached the set value.

Tools required: Thermometer with 0.1℃ definition.

Steps:

- Turn on the machine.
- In DL-2410 machine Windows PC**,** go E: \ 2410 \2410, click 



- Measure the temperature of each tank by thermometer, and then adjust the appropriate trimmers on the Washcontrol PCB to get the display temperature matching the actual temperature which is read out of the thermometer.

Trimmer definitions of the Washcontrol PCB are as below:

Trimmer	Definition
VR2	CD
VR3	BF
VR4	STB1
VR5	STB2
VR6	STB3
VR7	Dryer
VR8	Room Temp.
VR8A	STB4

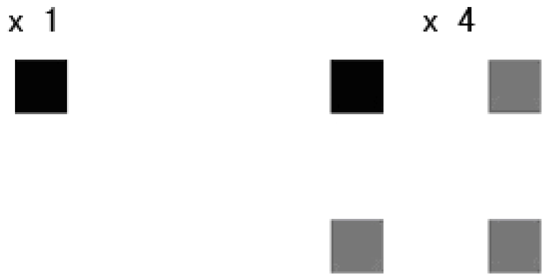
- Select DL-2410 in LAB Model and Linux socket.
- Take precaution when measuring to avoid chemical inter-contamination, when reading the thermometer, leave the thermometer in the tank.

2.5 Twister 4 calibration

A photo printed on a DL-2410 is composed of pixel matrix. DL-2410 uses a 2048×1536 resolution LCD for image making, so that for each time exposure, if there is a 1280×1024pixel matrix coming onto the photo.

Actually this resolution is not good enough for the photographic business, so that DL-2410 uses 4 or 16 times exposure technology to expose 4 or 16 times for each photo; a 2560x2048 or 3840x3072 pixel matrix will come onto the photo at the end.

During each time exposure the information on the LCD is different.



The position of each time exposure is controllable, the final result of the photo must be composed of a uniformly distributed pixel matrix, if 2 pixels are close to each other too much then there will be a overlapping effect so that it will come up the tiny horizontal or vertical lines or grid lines on the photos.

Purpose: To remove the strong grid lines of the photos which are printed by 4 times exposure mode, in the case the grid lines appear on these photos after several months, this calibration shall be performed.

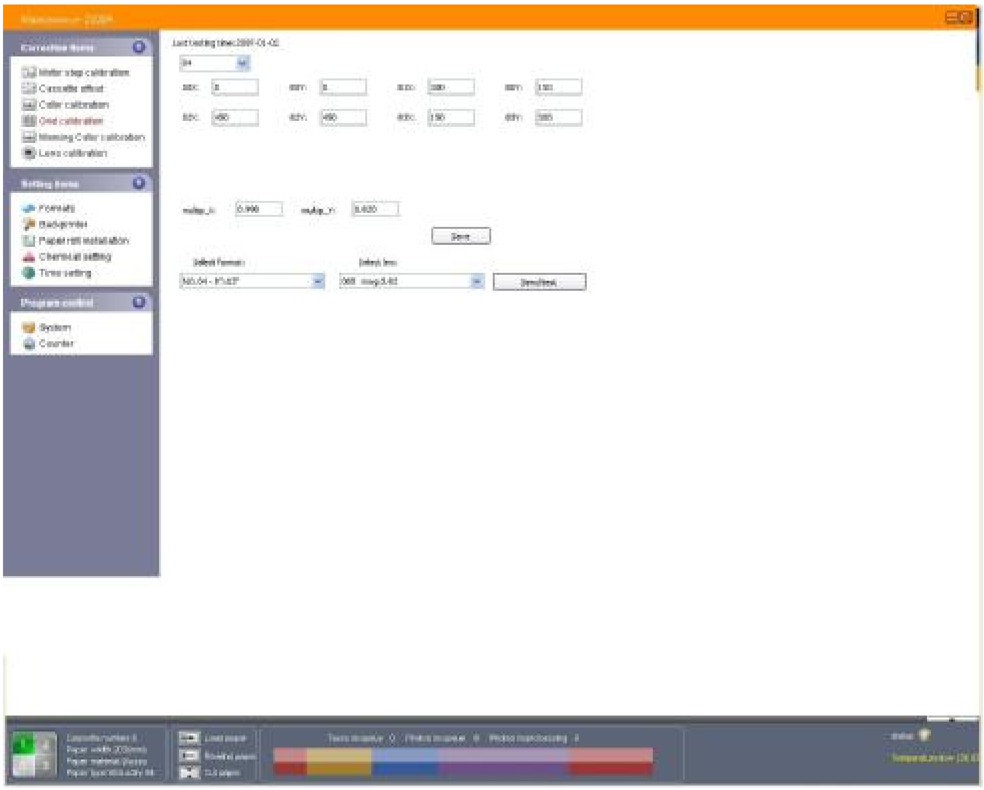
Tools required:

- Magnifier (at least 8X)
- 152mm glossy paper

Steps:

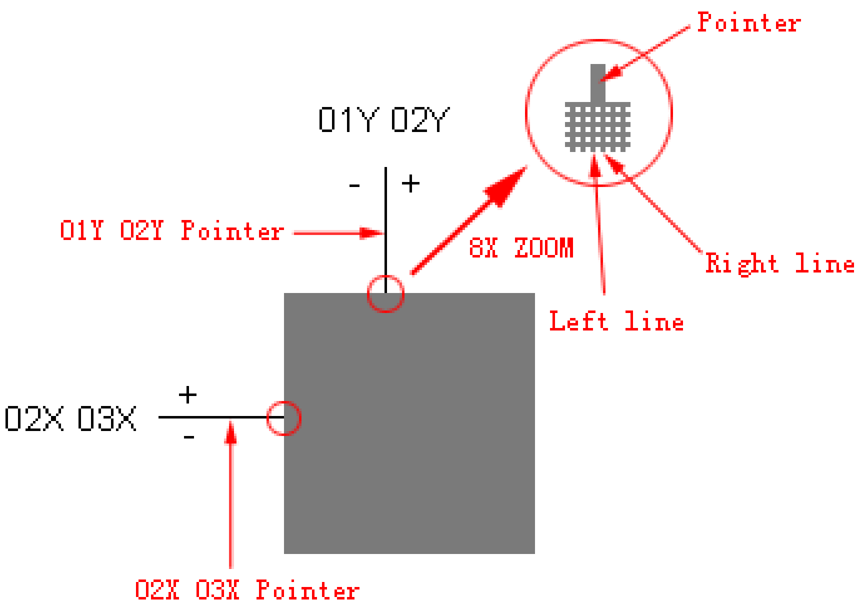
1. Send a test print.
   - On the DL-2410 machine Windows PC run **PhotoSmart**.

- Run **Maintenance** and choose **Grid Calibration**.

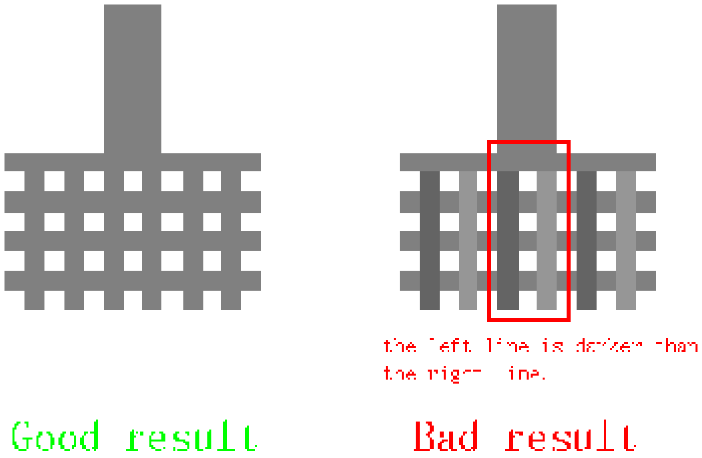


- Choose **'04'** and choose **'len 000'** and format **'6x8inch'**..
- Click **'Send Test'**.

2. On the central district of the test print, observe the joint point between the **01Y 02Y** pointer or the **02X 03X** pointer and the square by magnifier.



An bad result as following example:



Usually there are two lines beneath the **01 02Y** pointer; the density of these 2 lines shall be the same. Otherwise the **01 02Y** line shall be moved to the direction of the darker line.

- Assuming the density of the left line is higher than the right line, the **01 02Y** pointer shall be moved leftwards. The left side of the **01 02Y** line is a minus (-) sign, therefore in the **Grid Calibration** the key **01Y** and **02Y** shall be decreased the same value in the meantime, such as: -2.
- Click **Save** .
- Click **Send Test** to send a new test print, repeat the above adjustments until the result is good.
- The adjustment methods of **02X** and **03X** is similar.

2.6 Twister 16 calibration

For big size photos, print resolution by 4 times exposure is not enough; DL-2410 hires 16 times exposure to offer a higher output resolution.

If “HQ” is selected in maintenance -> formats, this format will be printed by 16 times exposure.

There is not necessary to apply 16 times exposure to small size formats such as 152x102mm etc, because 4 times exposure is good enough for these sizes while exposure speed is much faster than 16 times exposure.

Purpose: To remove the strong grid lines of the photos which are printed by 16 times exposure mode, in the case the grid lines appear on these photos after several months, this calibration shall be performed.

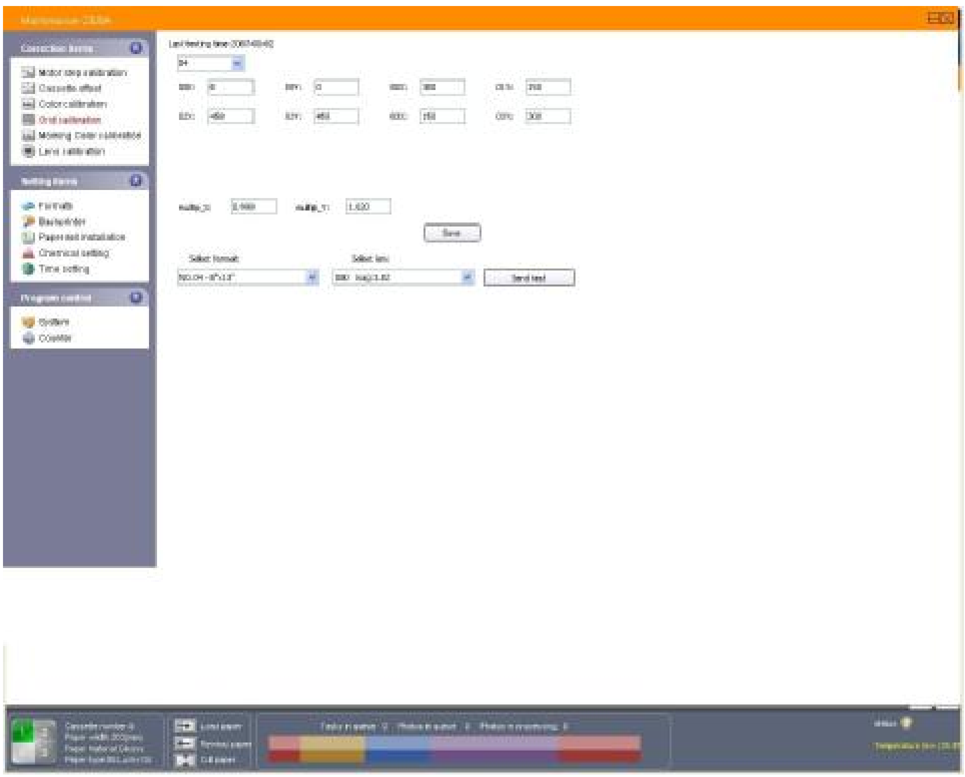
Required: glossy paper

Steps:

1. Create a new format 457x150mm with “HQ” selected in maintenance -> formats.

2. Make ring around test prints.

- On the DL-2410 machine Windows PC run **PhotoSmart**..
- Run **maintenance** and choose **Grid Calibration**,
- Choose **‘16’** and adjust the value **multip_X** and **multip_Y** until satisfied (you may make the increment or decrement 0.1)



2.7 Uniformity calibration

Purpose: To calibrate the uniformity of colour or density to be the same at each district of the photo; to remove the slight vertical lines on the photo.

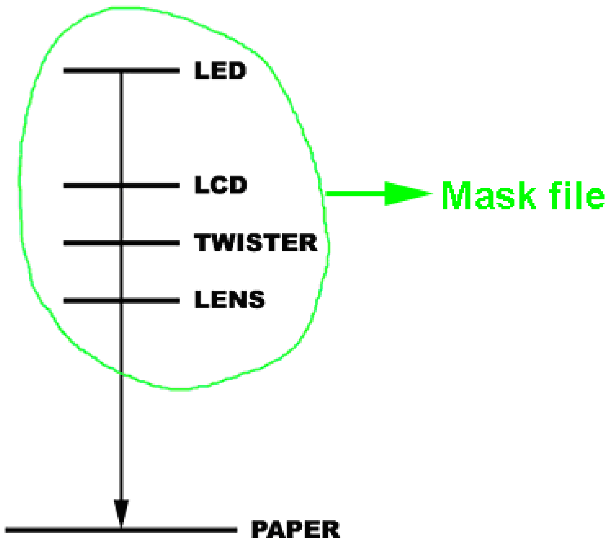
If you print a photo from a neutral grey test film or a neutral grey test file, and the result is uniform neutral grey at each district of the photo, then the density and uniformity of the photo shall be good.

Usually there is a diffuser (mirror box) in film minilab, of which the function is to convert the diffusive light emitted from halogen lamp to coherent light (parallel light), so as to get a uniform neutral grey photo.

There is no diffuser in DL-2410. However the density uniformity result of the photo which is printed from a neutral grey test file is perfect. This attributes to that DL-2410 adopts software control the transmissivity of each LCD liquid crystal particle that is on LCD to simulation the effect of a diffuser.

Mask file records the transmissivity correction of the LCD liquid crystal particles, of which the file extension name is prn.

So the Mask file is a virtual diffuser.



Mask file is a total compensating result of exposure unit. There 4 lens in DL2410, so that there are 4 Mask files needed for printing.

The Mask file shall be re-calibrated when the following event occurs:

- Replace LED
- Replace LCD
- Replace LCD Driver board
- Adjust LCD Driver board
- Replace lens

- Slight vertical lines appear on the photos

Tools required:

- A4 flatbed scanner which is with 24 bit colour and 600dpi scanning capability
- **Photoshop** software
- glossy paper
- Format recommended: 305 x 356 (lens001), 457 x 508 (lens 000), 457 x 635 (lens002), other formats bigger are also applicable. (Resolution in scanning 500DPI)

Preconditions:

- The scanner has been cleaned so that there is no dust or finger mark on it.
- The **Maintenance** > **Color Calibrations** has been completed for the glossy paper.
- The scanner has been calibrated if necessary.

The scanner calibration shall be performed only if the deviation of the colour or density between the scan image and the scan object are big.

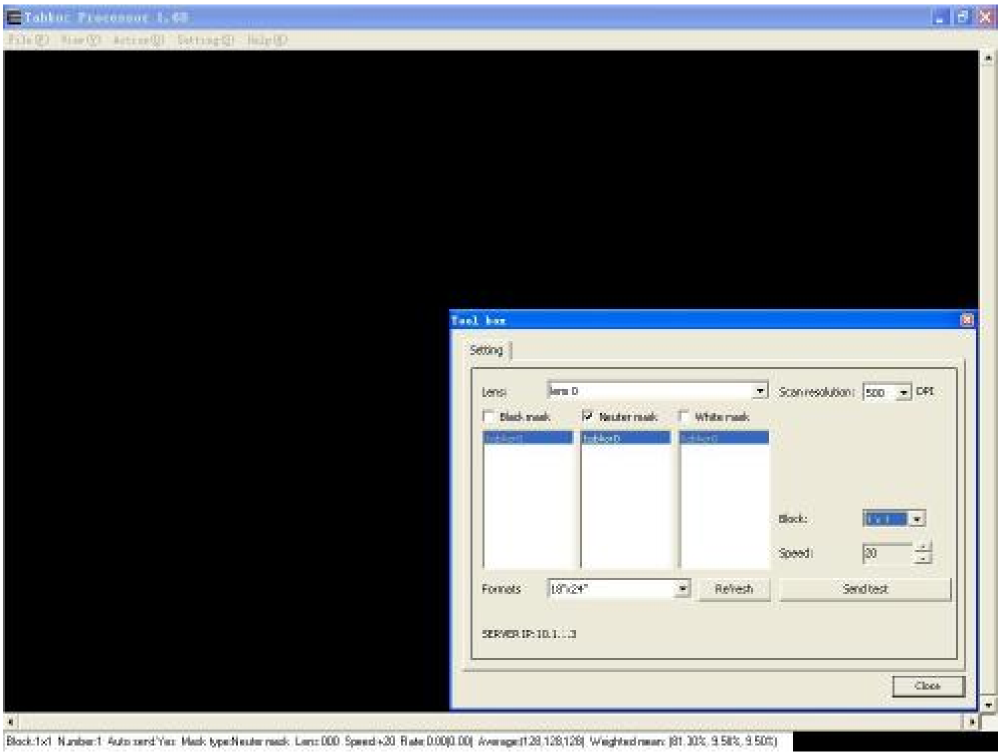
If scanner is good, you can skip this step by just selecting a scanner profile from the list.

Steps of scanner calibration:

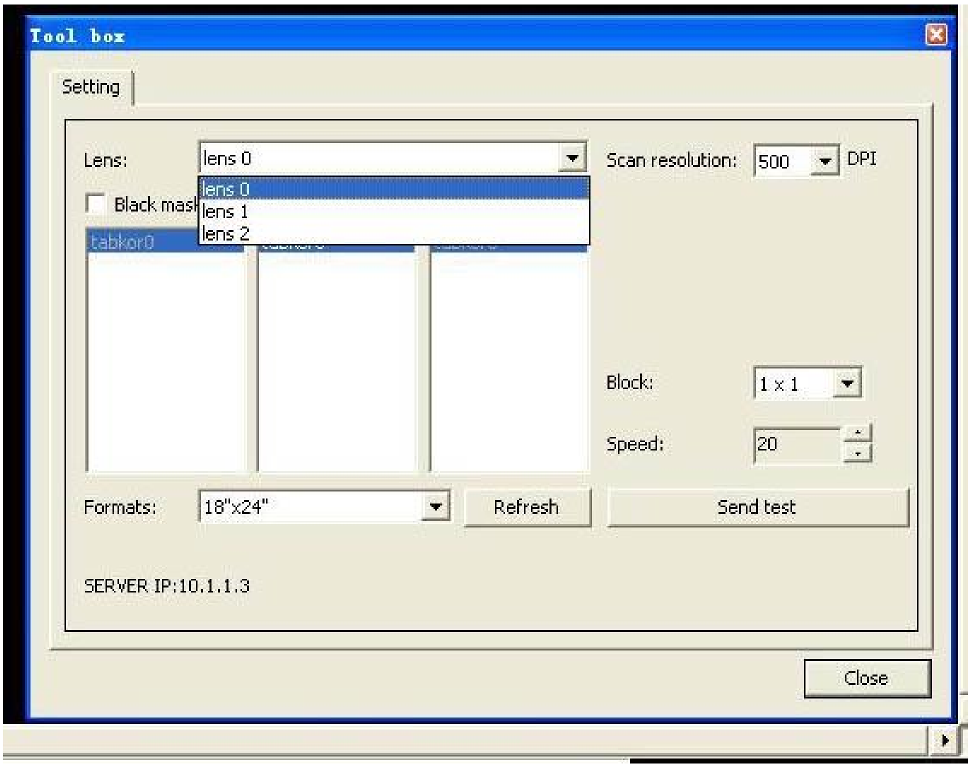
1. Finish the color calibration and create the right format for uniformity calibration first.(Format recommended: 305 x 356 (lens000), 457 x 508 (lens 002), 457 x 635 (lens001), other formats bigger are also applicable. (Resolution in scanning: 500DPI.)
2. Open the Tabkor Processor software(E:\DL-2410\Scanner)



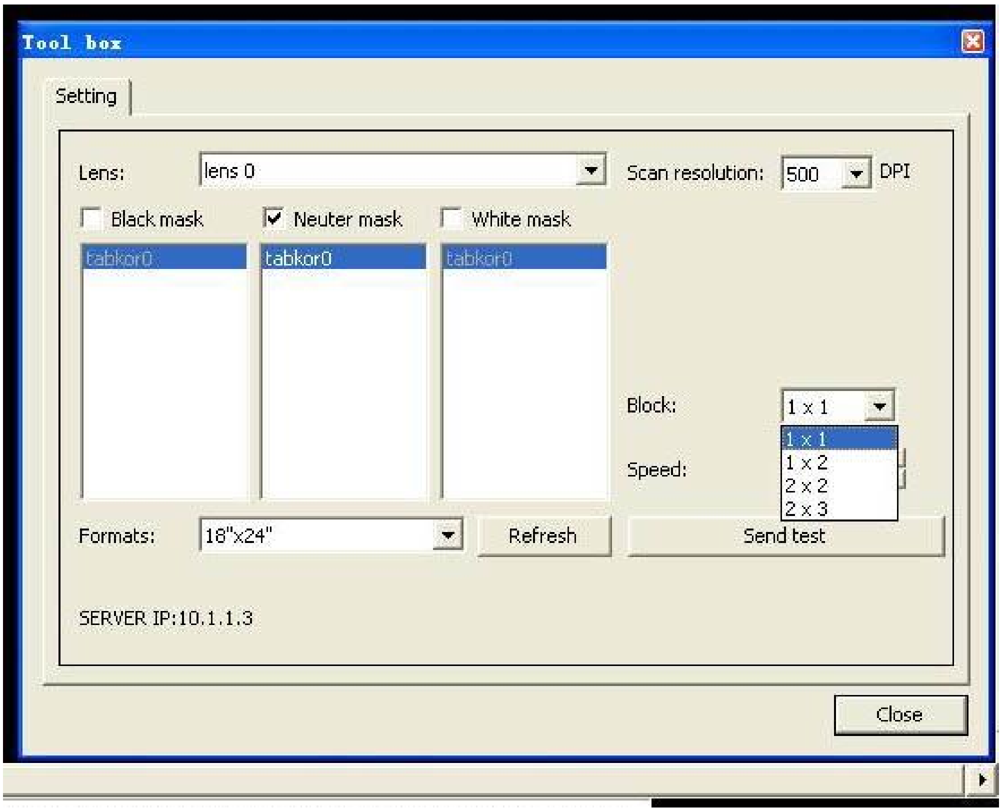
3. The main interface of the software as blew:



4. First choose the 'Lens 000'

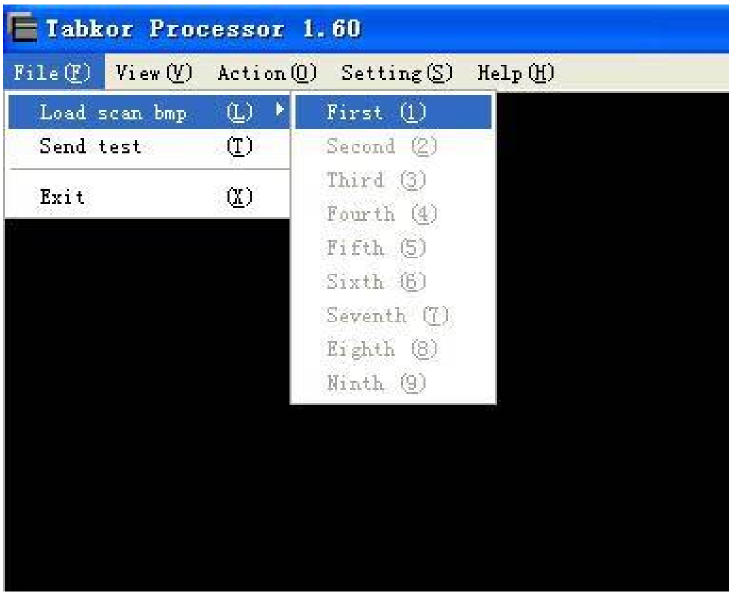


Choose 'neuter mask' and choose 'tabkor0'.

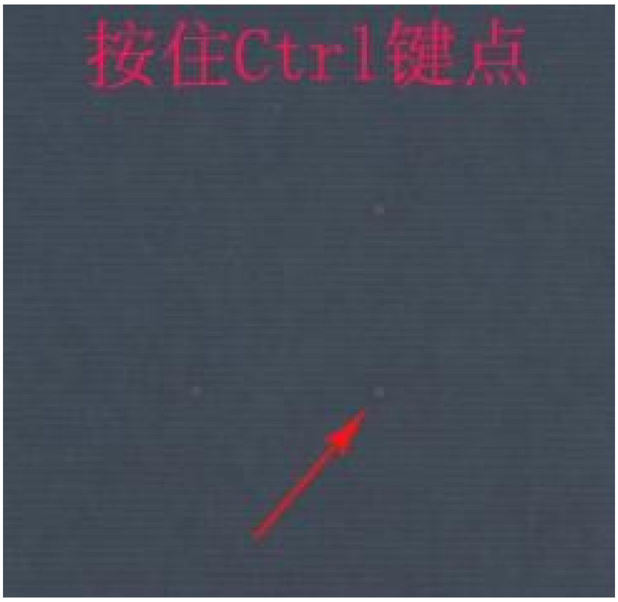


Scanner resolution: 500DPI and '1x1' (or 1x2) in Block (depend on your scanner, A4 scanner use 1x2, A3 scanner use 1x1), then click 'send test' to send the uniformity test photo.

5. Scan this photo (resolution: 500DPI) and save as *.bmp, then use the Photoshop software to remove the dust on the photo. (If you use the A4 scanner, you need scan the photo to two parts.)
6. In the Tabkor processor software, choose 'File'—'Load scan bmp'—'First'



Find 4 group of the red sign point on the corner of the uniformity photo, hold press ‘Ctrl’, and right click the red sign point as the picture below:



.

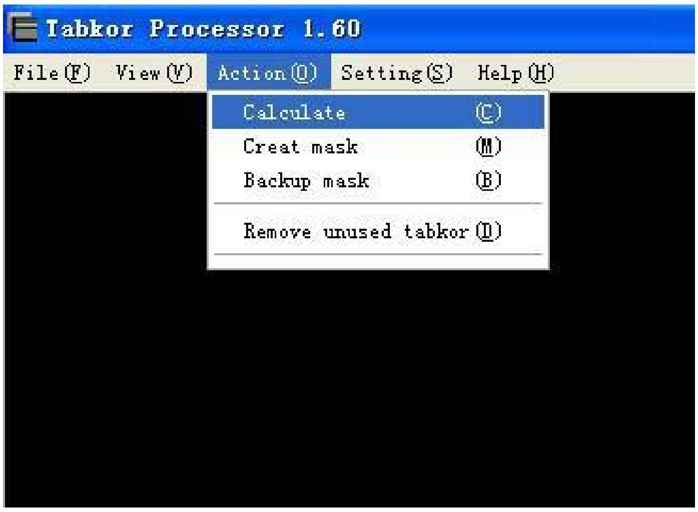
Then it will show the rectangular line as the picture below:



When you finish the fourth corner of red sign point, it will automaticlly show the mark points on the picture:



7. .In the Tabkor processor software, 'File'—'Action'—'Calculate' to calculate the date:



You can see the progressing in the lower right corner (if you use the A4 scanner, you need load second part and click the 'calculate' to finish the calculattion)

Then go to 'File'—'Action'—'Creat mask', you will see a dialog box as below:



Click ‘send test’ to send the uniformity test photo again.

Click ‘yes’ to send the calibration photo, and then repeat the steps above until you see the uniformity calibration photo is equal.

8. When Lens 000’s uniformity finish, choose ’lens 002’ to continue the calibration.

If red border appears on the photo after scanning, check **Clone stamp** operation in **Photoshop**, you may have to restart the calibration procedure from an early .prn file which doesn’t bring red border to the photos.

To restore an early .prn file to Linux PC before restarting the procedure:

- Copy and paste the file into Linux PC **\\10.1.1.1\tables** folder from Windows PC (assume that you have backup the early file to Windows PC).
- Open Linux registry, specify **etc/lens/001/tabkor**, change the file name according to the file you just copied, then click **Save now**.
- Specify **etc/lens/000/tabkor**, change the file name according to the file you just copied, and then click **Save now**.
- The same is true for lens 001, at last copy lens 000 to 002. (000 → 002 → 001)

In factory, Uniformity Mask is calibrated by a special method-attach a special Lens below the lens of DL-2410 to reduce the exposure image on the paper, this is the best way by which you don’t have to extend the border of the scan image by **Photoshop**, but focus adjustment is needed during the factory procedure by a CCD camera. It is not possible and not necessary for user to use the factory method, but in case of red border appear s and not possible to be avoided, factory procedure shall be performed in stead of **Photoshop** method.

Please ask dealer for further information.

2.8 Replenishing system setup

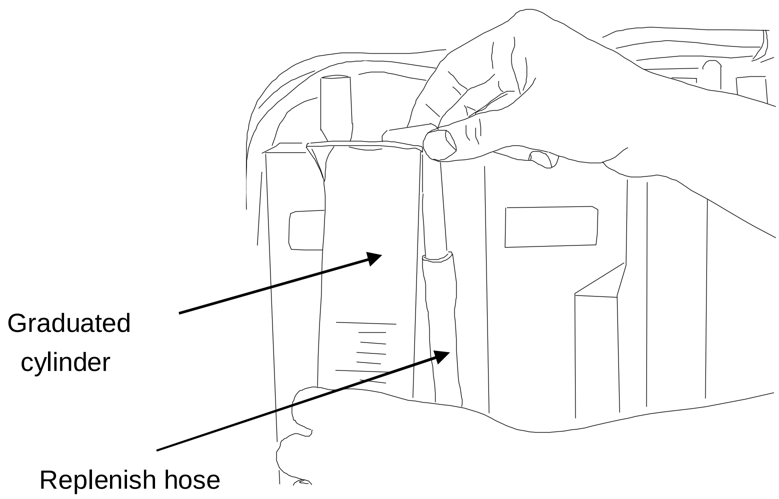
Purpose: Setup the replenishing system to meet the requirement of the chemistry instruction.

Tools required: Measuring cup/cylinder

Steps:

1. Measure the flux of the CD replenishing pump.

   - Remove the left side cover of the machine, and then put the replenishing pipe outlet to the Graduated cylinder or measuring cup.



   - On Linux LCD panel, press any button of the top 4 buttons to enter following interface:



   - Press the button on the left to **Pumps** to enter the following interface:



➢ Press the button on the right to **regenerations** to enter the following interface:



➢ Press the button on the left to **developer** to run CD replenishing pump 30 seconds.

- The replenishing pump runs 30 seconds and then stops automatically for each time test.
- For the first time measurement, if there is a little air inside the pipe, throw away the chemistry and then test again.

➢ After the pump stops, repeat running the pump, all together run the pump for 5 times.

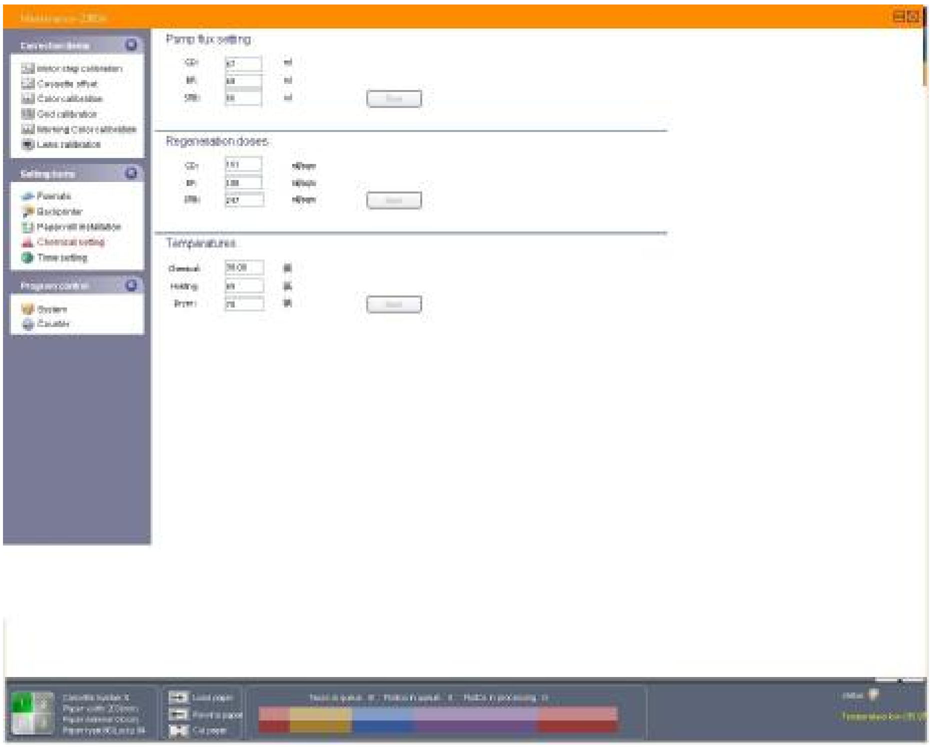
➢ Carefully put the replenishing pipe outlet back to the tank, and then read out the total chemistry value of the measuring cup.

➢ Calculate the average value of the CD replenishing flux for 30 seconds by dividing the total value by 5.

2. Input the CD replenishing flux into **Maintenance**.

➢ Run **Maintenance**, and select **Chemical Setting**.

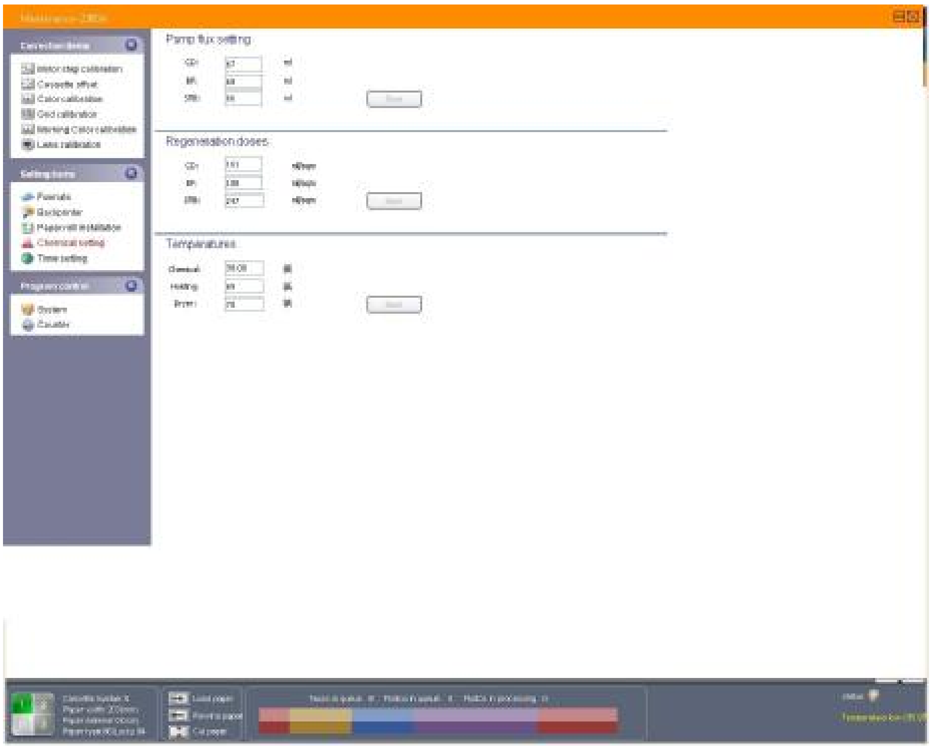
➢ Input the CD replenishing flux value in **Developer** and then click **Save**.



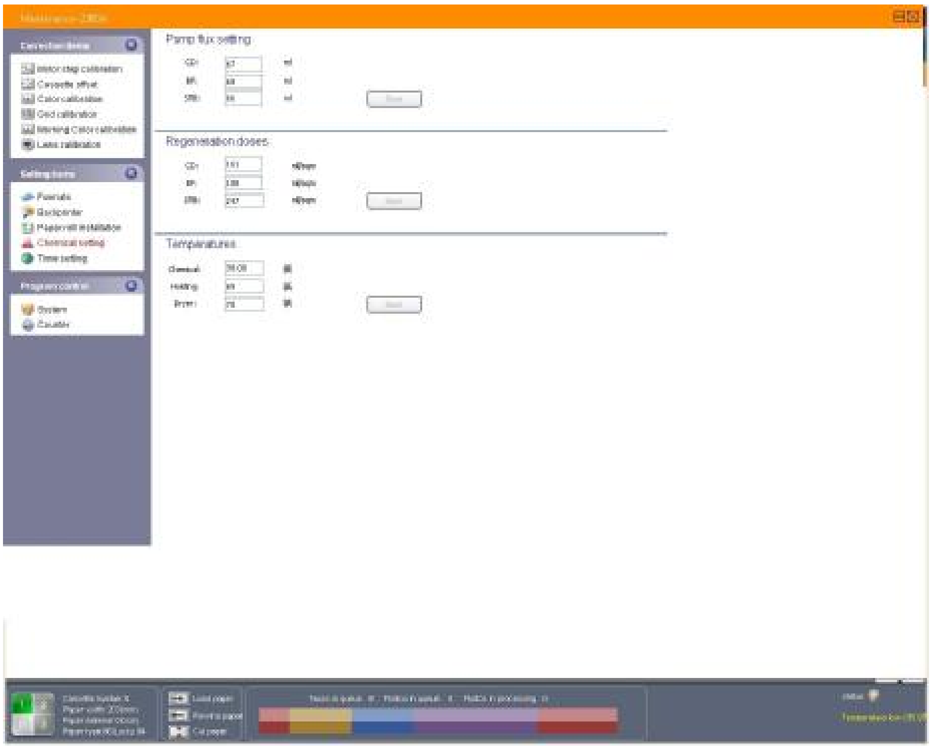
3. Repeat for BF.

4. Repeat for STB.

5. In **Maintenance** > **Chemical Setting** setup the Regeneration does value depending on the chemical specification you are using.



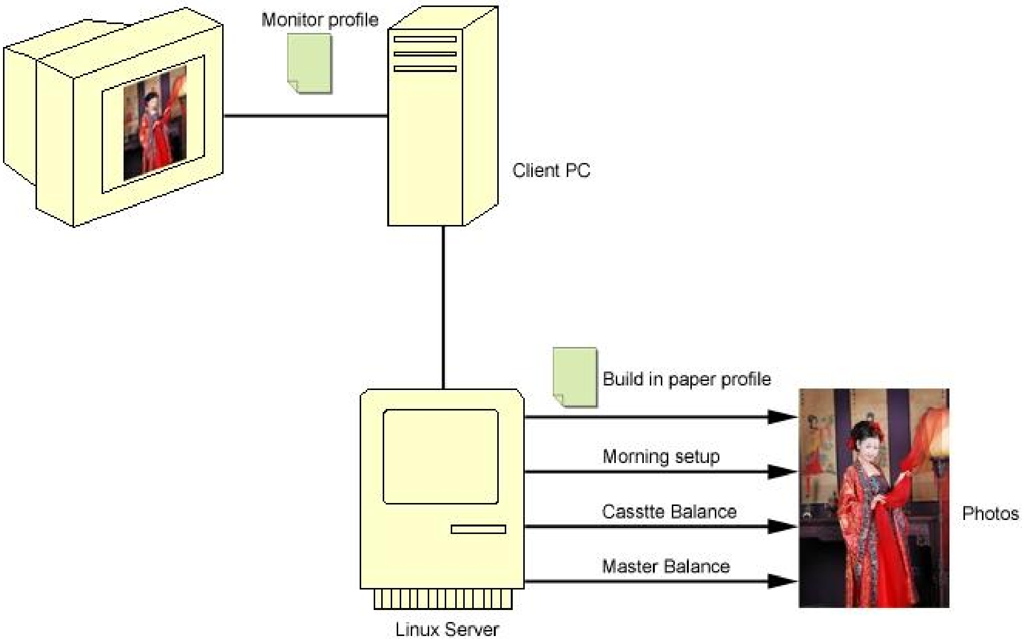
6. Please delete this section!! In **Maintenance** > **Chemical Setting** setup the Regeneration does value depending on the chemical specification you are using.



If the daily print quantity is small, and you want to keep the chemical active, the **Regeneration doses** value could be increased a little bit.

2.9 Colour management-from monitor to photos

Purpose: to ensure the colour of the photos look as close as its preview on the monitor.



Preconditions:

- Calibration with Densitometer has been performed..

3.1 DL-202Ps Densitometer

- Standard ambient light has been installed in the Studio.

It is recommended to use Philips true colour fluorescent lamp as the standard ambient light of the studio, ask Philips sales and service people for more information about the fluorescent lamp selection and installation.

Work flow:

1. Calibrate monitor.

- If the monitors colour fidelity is good and support sRGB colour management, set the monitor to the sRGB mode.

  - To see if the monitor's colour fidelity is good, Open **Photoshop**, the background of **Photoshop** shall appear to be neutral grey.

  - If the monitor supports sRGB colour management, sRGB mode can be set in the monitor adjustment menu that is usually under **colour management**.
  - sRGB is the working colour space of **PhotoSmart** and most digital camera.
- If the monitor colour fidelity is not good (for example: old monitor) or it does not support sRGB colour management, first on the monitor adjustment menu set the monitor colour management to 6500K, and then create an ICC profile for the monitor by **Adobe Gamma** or other software.

☞ Refer to related books of **Photoshop** for **Adobe Gamma**.

2. Register paper profiles.

   Paper profiles have been created in the factory for each brand and built in the Linux PC. For user, just select the correct paper profiles for the cassettes when register the cassettes, for example: cassette 01 is loaded Kodak paper, so that you shall register cassette 01 as Kodak band.

   - Run **maintenance**.
   - Select **paper roll installation** and then click **Next**.
   - Select cassette numbers for **registration**.
   - Select paper profile for the cassette number which you have just selected.
   - Complete other registrations.

If the paper profiles is deleted or lost by accidental error, the corresponding paper brand will not be available in the list of **Paper roll installation**. In this case, backup all the calibration data of the machine, reinstall Linux system with Linux recovery CD, and then restore all the calibration data.

☞

  - **3.2** Data backup and restore
  - **3.3** Linux system backup and recovery

3. Complete the morning setup.

☞ 2.1 Morning setup

4. Print sample photos; compare the colour between the photos and the monitor preview. If still not satisfied, use **Cassette balance** or **Master balance** for ultimate control.

The colour could be managed from monitor to photos but they will not be 100% the same. Photos and monitor interpret colour in different ways. Usually the photos are more brilliant than the monitor preview since the photos belong to another colour space which is bigger than sRGB and the colour has been transferred to a wider range than sRGB during the printing and processing.

- To use **Cassette balance**:
  - Run **Maintenance**.
  - Select **Paper roll installation**.
  - Select cassette number and then click **Modify**.
  - Change the values of C, M, Y, D, for example: + or -0.01.
  - Click **Save**.
- To use **Master balance**:
  - Run **Maintenance**.
  - Select **Lens Calibration**.
  - Change the values of C, M, Y, D, for example + or -0.01.
  - Click **Save**.

After modifying the values, print sample photos again and repeat the above procedure until satisfied.

- **Cassette balance** only affects the colour of the photos of the given cassette.
- **Master balance** affects the colour of the photos of all the cassettes.
- Neither **Cassette balance** nor **Master balance** affects the test prints of the morning setup.
- Either **Cassette balance** or **Master balance** can be used for quick colour control especially for black and white photos.

3

Chapter 3 Service

This chapter contains information for service personnel.

Prologue

Take some time to read the manual and study the machine until you understand everything well before you perform the service.

Ask somebody for help if you are not confident with the things you are going to do to avoid serious problems.

3.1 DL-202Ps Densitometer

Installation

The detail is as follows:

1. Insert the installation CD of DL-202Ps densitometer, click **Densitometer.msi** to begin installation wizard.
2. Follow the installation wizard to complete installation.

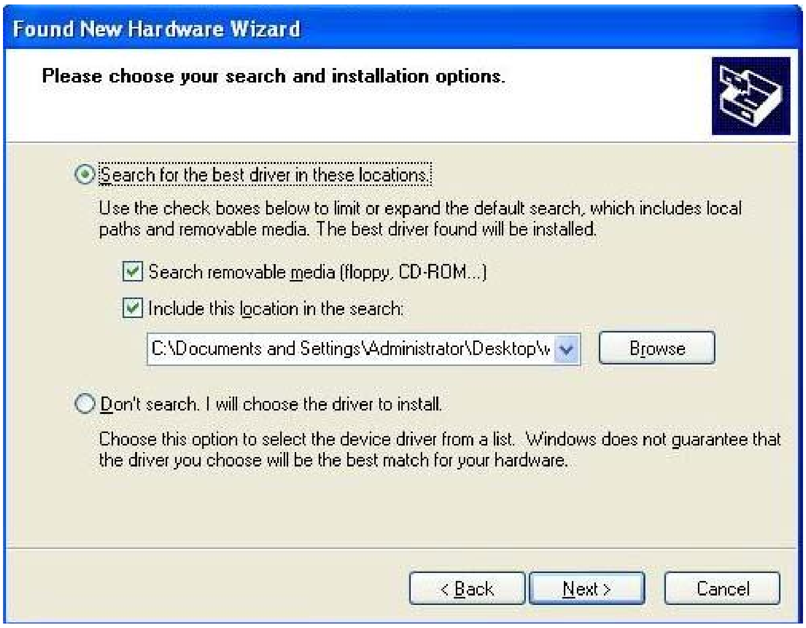


3. Connect densitometer to the computer. With a “Beep” sound and the green LED on, the densitometer is detected by the computer (See Figure3-1).



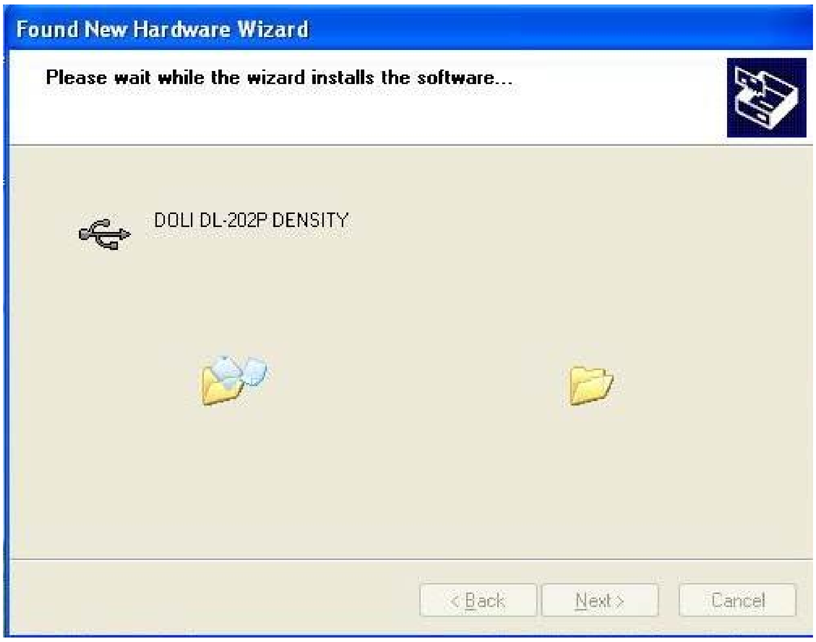
（Figure3-1）

4. Insert the CD into CD-ROM. Click **Install from a list or a specific location (Advanced)** and click **Next** (See Figure 3-2)



（Figure3-2）

5. Put a tick before **Search removable media (floppy, CD-ROM…)** and click **Next**, the system will search installation drive; Or, put a tick before **Include this location in the search** and click **Browse** to open densitometer drive path and click **Next** to search installation drive (See Figure 3-3)

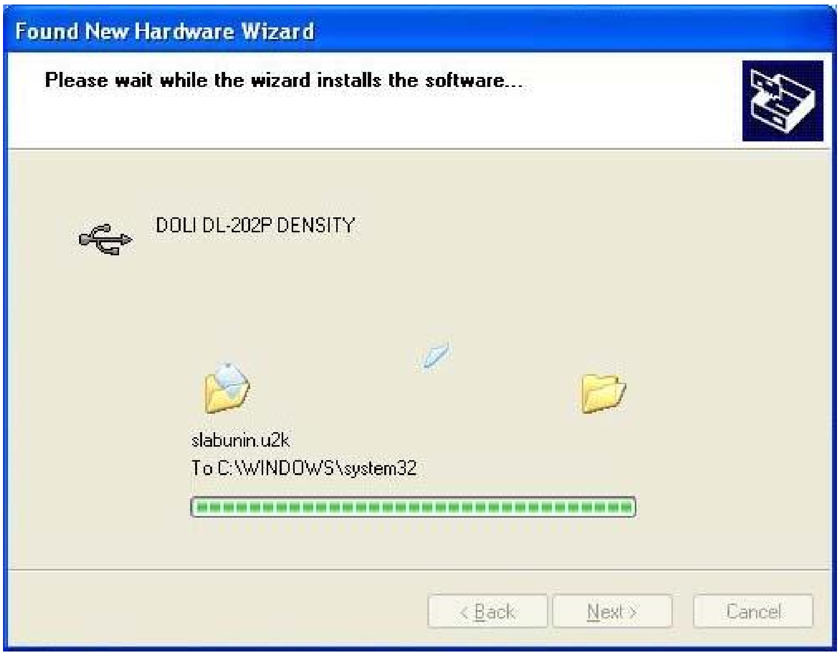


（Figure3-3）

Click **Continue Anyway** (see Figure 3-4 and Figure 3-5)



（Figure3-4）



（Figure3-5）

Click **Finish** to finish installation of USB drive (see Figure 3-6)



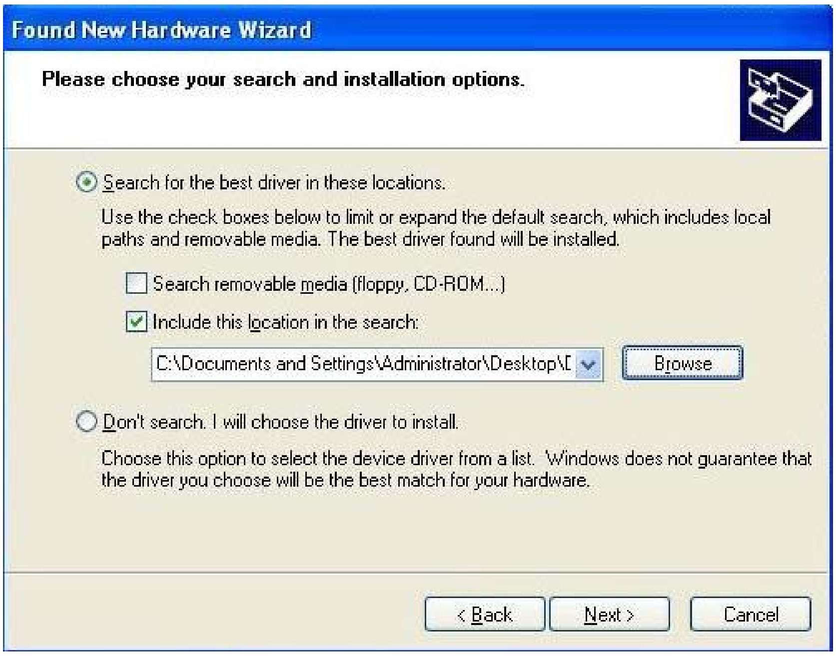
（Figure3-6）

6. System search again (see Figure 3-7)



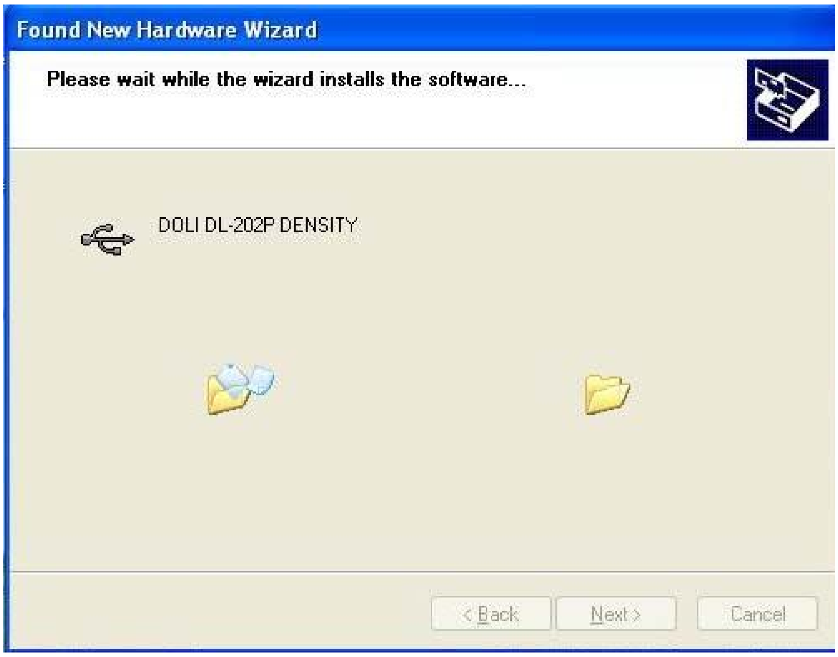
（Figure3-7）

7. Click **Install from a list or a specific location (Advanced)** and click **Next** (see Figure 3-8)



（Figure3-8）

8. Repeat step 5 until serial port drive installation finishes (see Figure3-9, Figure 3-10 and Figure 3-11)



（Figure3-9）



（Figure3-10）



（Figure3-11）

9. Click **Finish** (see Figure 3-12)



（Figure3-12）

10. After finishing the above steps, densitometer drive installation is finished (see Figure 3-13)



（Figure3-13）

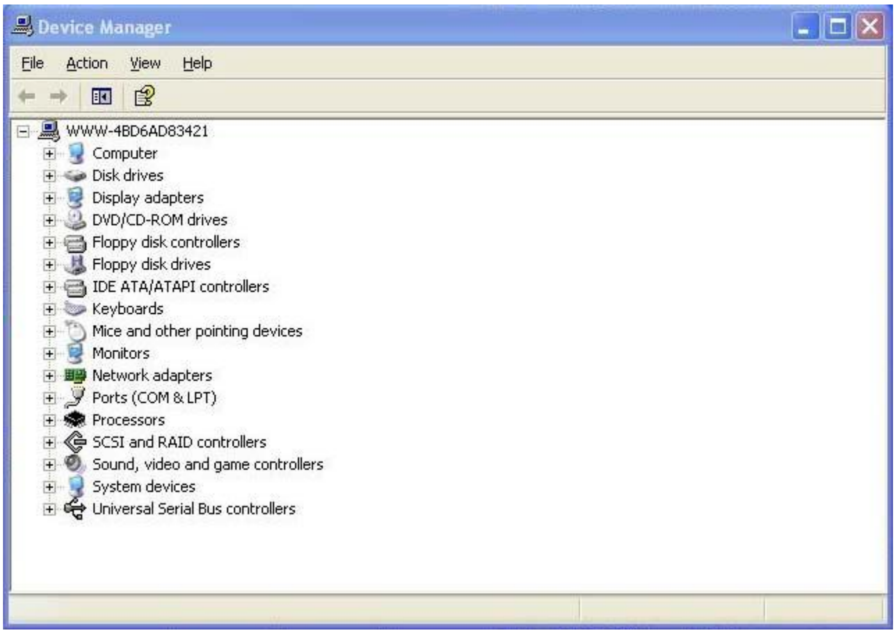
11. Check densitometer serial port in **Device Manager**：

Right click **My Computer** and select **properties** (see Figure 3-14)



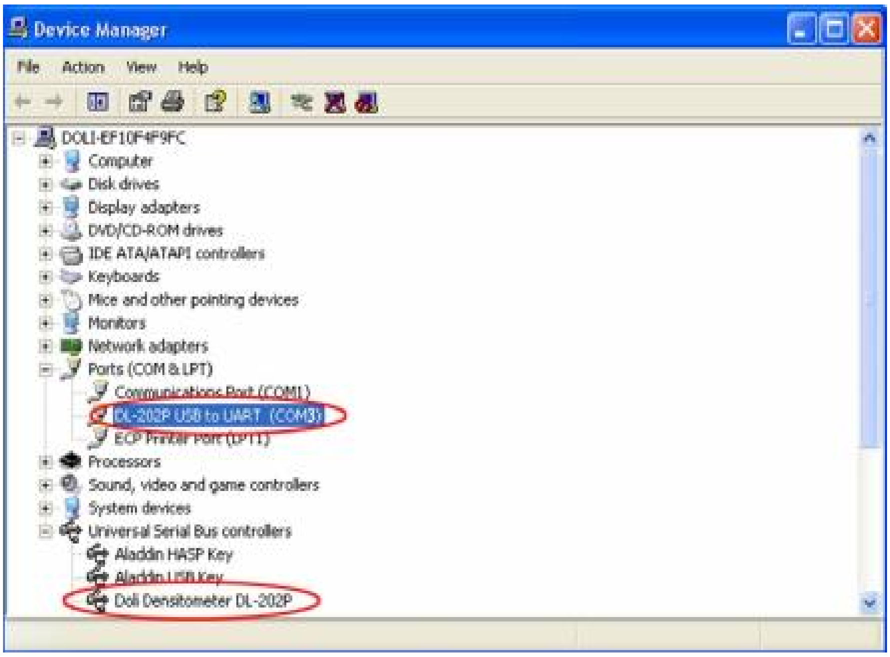
（Figure3-14）

Click **Device Manager** (see Figure 3-15)



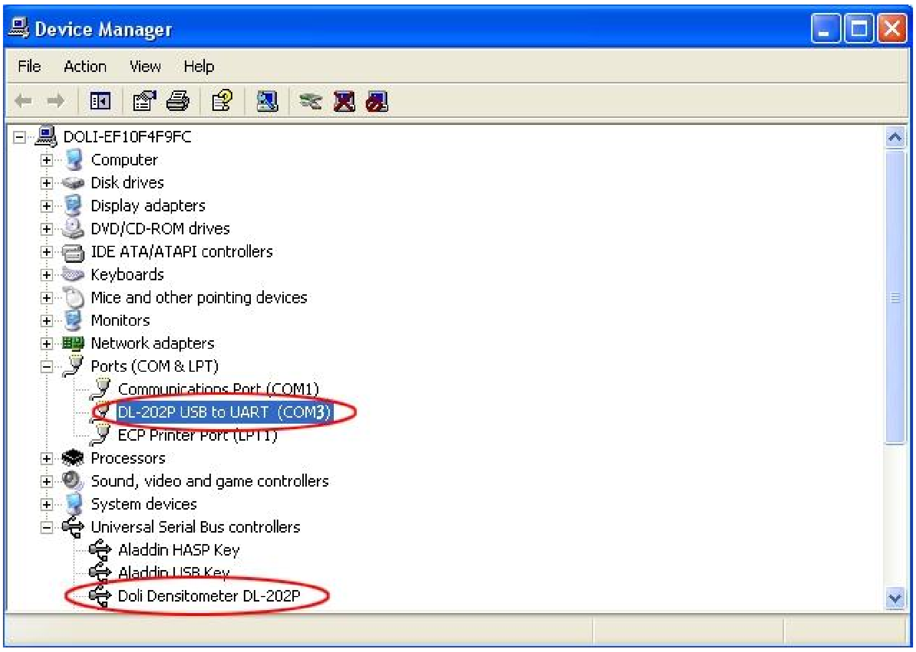
（Figure3-15）

Click + before **Ports (COM&LPT)** and **Universal Serial Bus controllers** (see Figure 3-16)



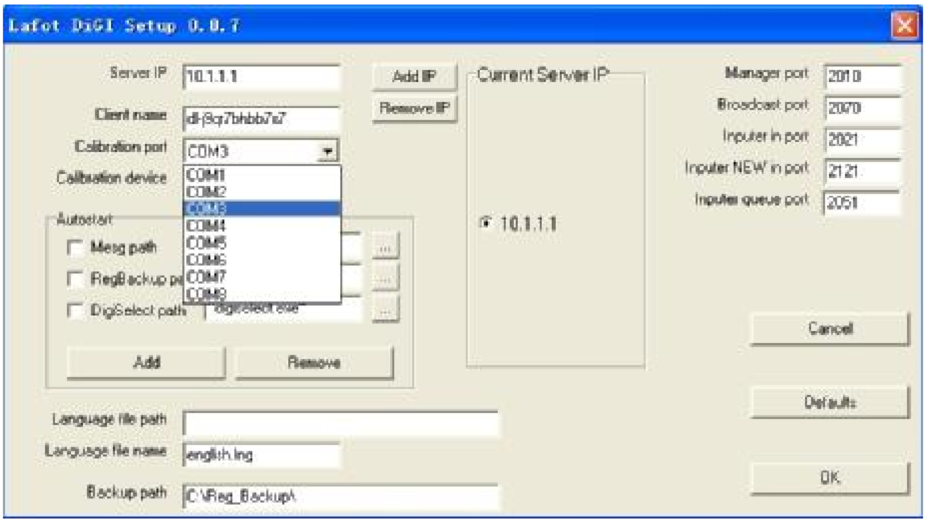
（Figure3-16）

As you can see from the above, serial port and USB drive of densitometer installation is finished. Its serial port is COM3.



12. On the Windows PC, click Start, and then Run, and then key in \\10.1.1.1\winsoftware, and then enter.

13. Run Config.

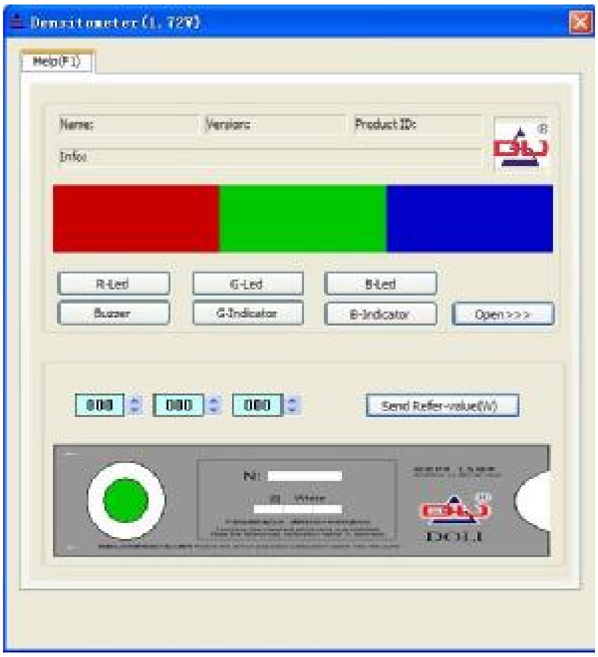


14. In Calibration port box, select the correct COM port number.

15. Click OK to close Config.

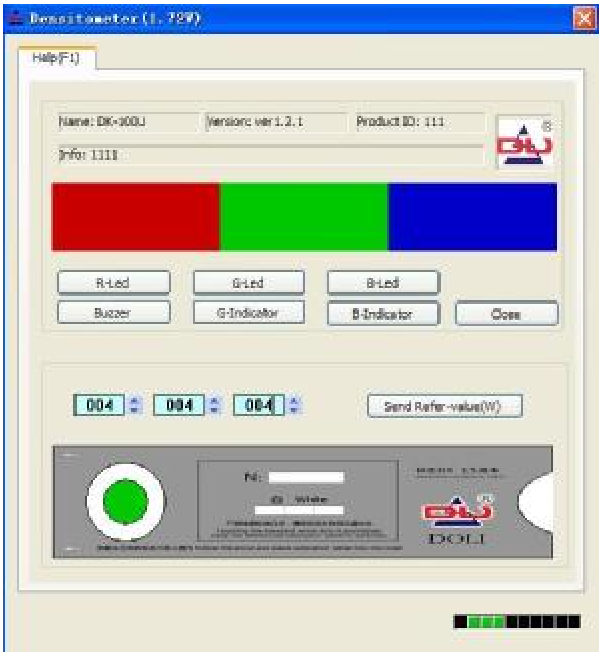
Show densitometer test value

1. Open DL-202Ps User Interface (Usually in Windows PC E:\DoLi\Densimeter or Windows Desktop Start -> Programs-> Doli -> Densitometer).



（Figure3-17）

2. Click **Open>>>** on the right side to open a pull-down menu; Select the corresponding COM, you will hear beep sound and LED turns red (duration: about 0.5 S) from green and turns green again; A scroll bar pops up (keep scrolling) and corresponding information is displayed in the primary interface; Communication between densitometer and its software is established. (see Figure 3-18)



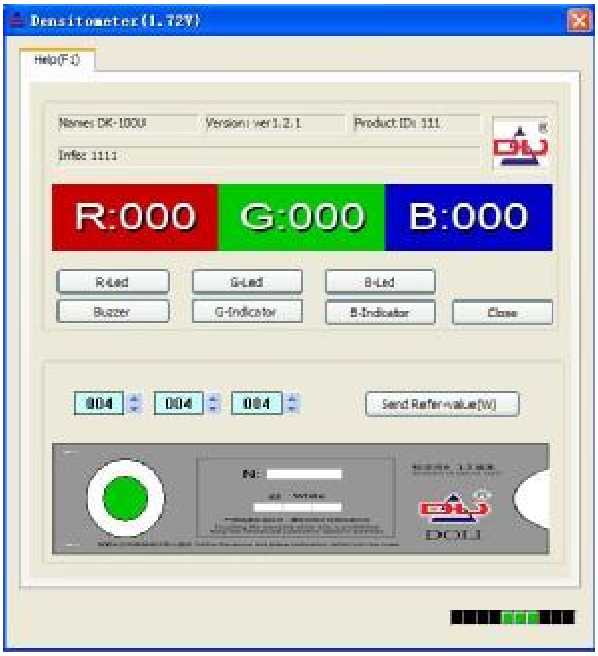
（Figure3-18）

3. **Primary interface**: After successful communication, you can see the name, version, product ID and corresponding information on the top.
4. The respective value of red, green and blue LED will be displayed in their corresponding areas.
5. The next line is for hardware testing. Click R-Led to turn on red LED, you can check from the bottom hole; the same is true of G-Led and B-LED. Click Buzzer to beep and click any button to stop. Click G-Indicator and B-Indicator to turn on top indicator.

Calibration

The bottom line is for calibration. It is used with a calibration strip when densitometer has deviation

Input the three values into the boxes according to calibration strip in left-right sequence. Click **Send Refer-value (W)** to save (densitometer beeps). Put the aperture on white test point, hold on to densitometer for about 6 seconds, the indicator on densitometer will flash once, and then the values will be shown up at the RGB colour blocks.



（Figure3-19）

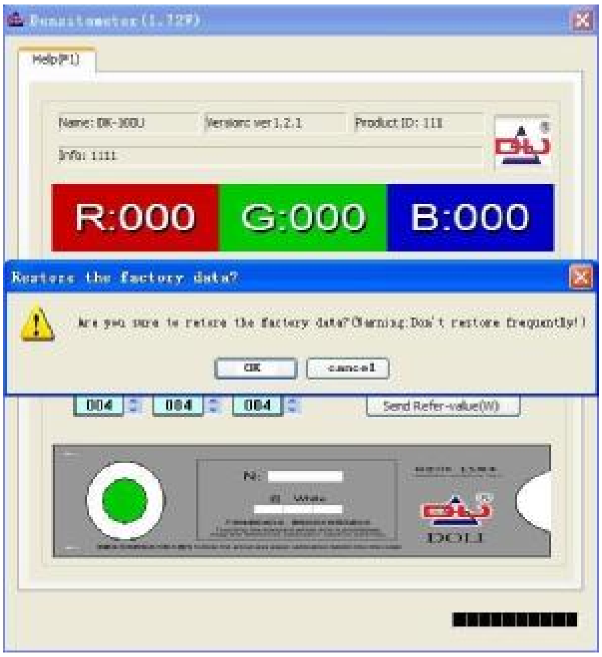


（Figure 3-20）Calibration strip

In calibration strip, the **Test point** is used for densitometer calibration; **Calibration value** is the value of R, G and B of the test point. For the sake of getting correct color of photo, please keep these areas clean! Keep calibration strip safe! Make sure no scratch!

When measuring, the hole of the densitometer base should be placed right in the middle of Test point.

Check calibration: After finishing the above step, position the densitometer on the white test point. When the densitometer beeps, check the values. If there is great deviation, it means the densitometer is not correctly calibrated. Repeat the above steps; if there is still great deviation (deviation within 001-002 is acceptable), you can restore factory data; Go to icon , hold on to **Ctrl** key and left key of mouse. A dialogue box will pop up in 5 seconds (see Figure 3-21). Click **OK**.



（Figure 3-21）

Note: When densitometer data are corrupted or the deviation is unacceptable, first restore factory data. If fault still remains, change a new densitometer. We recommend you not to restore factory data frequently.

Open help file

Left click “Help” (Hotkey: F1) to pop up help file which contains detailed operation instruction.

3.2 Data backup and restore

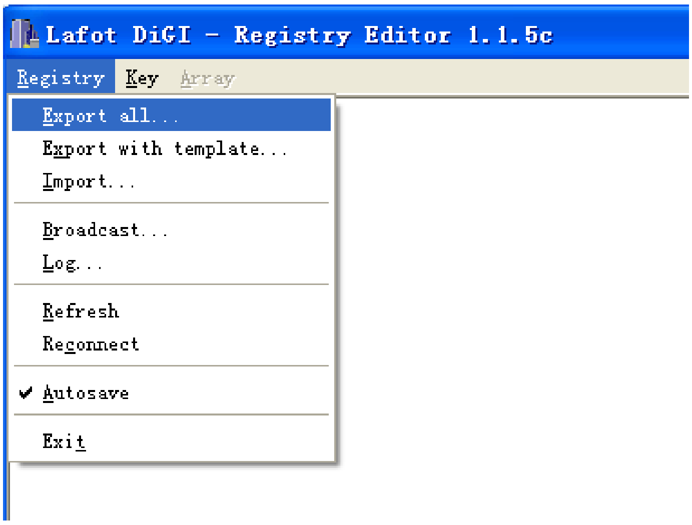
Purpose:

- To backup the calibration data to prevent unexpected data loss.
- To restore the calibration data in case unexpected data loss occur.

,Backup data every time before and after a major calibration is performed.

Steps of data backup:

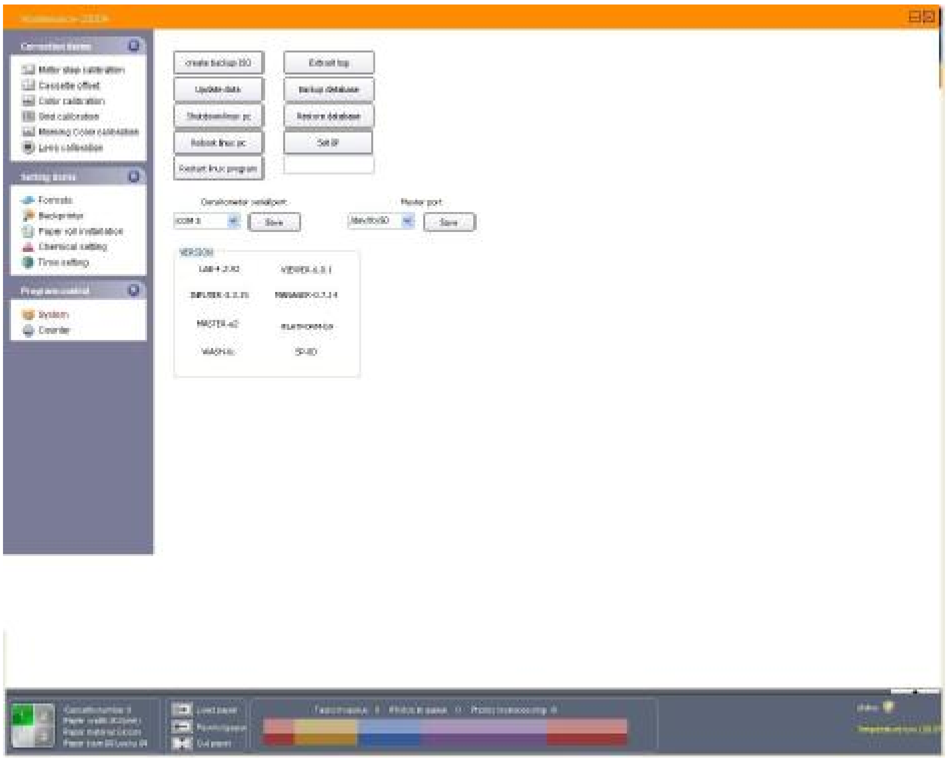
1. On DL-2410 machine Windows PC create a new folder, name **data backup**.
2. Backup Linux Registry.
   - On the DL-2410 machine Windows PC click **Start**.
   - Click **Run**.
   - Key in **\\10.1.1.1\win-software**, and then **enter**.
   - Run **Iregedit**.
   - On the left top of the window click **Registry**.
   - Click **Export all…**and then wait for a few seconds.



   - Specify **data backup** folder which you have just created, click **OK**.
3. Backup Mask files.
   - On DL-2410 machine Windows PC, click **Start**.
   - Key in **\\10.1.1.1\tables** and then **enter**.
   - Select all **.prn** files.
   - Copy and paste these files to **data backup** folder.

Steps of data restore:

1. Restore Linux Registry.
   - On DL-2410 machine Windows PC, click **Start**.
   - Click **Run**.
   - Key in **\\10.1.1.1\win-software**.
   - Run **Iregedit**.
   - On the left top of the window click **Registry**.
   - Click **Import…**.
   - Specify the data file which you have backed up in the **data backup** folder, click **Open**, and then wait a second.
2. Restore Mask files.
   - On the DL-2410 machine Windows PC, click **Start**.
   - Key in **\\10.1.1.1\tables** and then enter.
   - **Copy** and **paste** the Mask files which you have backed up in the **data backup** folder to **\\10.1.1.1\tables** folder.
3. Completion
   - Run **Maintenance**.
   - Click **System**:



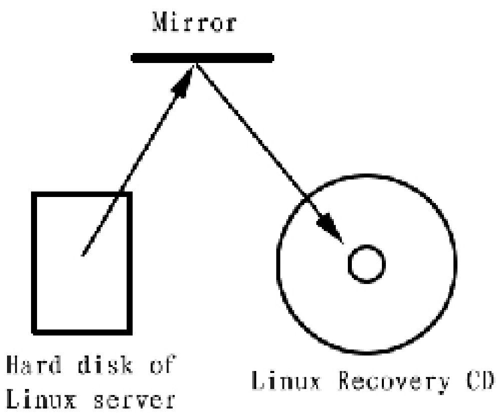
   - Click **Update date**, and then wait 5 minutes.

3.3 Linux system backup and recovery

Purpose:

- To make a whole Linux system backup by creating a Linux recover CD.
- To restore Linux system from Linux recovery CD.

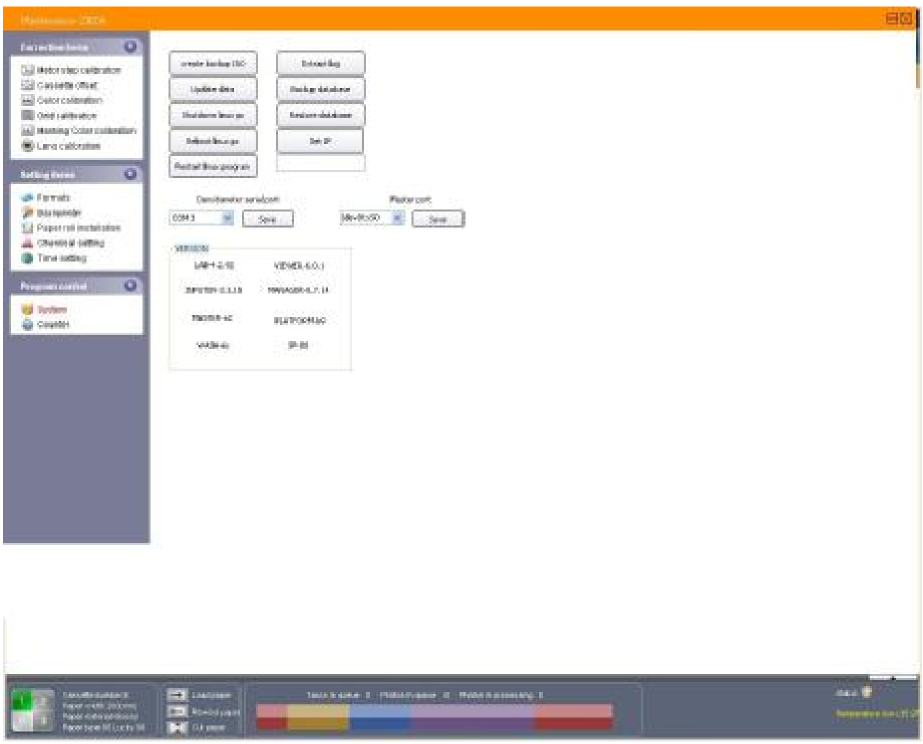
Linux recovery CD is an image of the hard disk of Linux PC. It includes all of the calibration data of the machine (Fig 3.4.1).



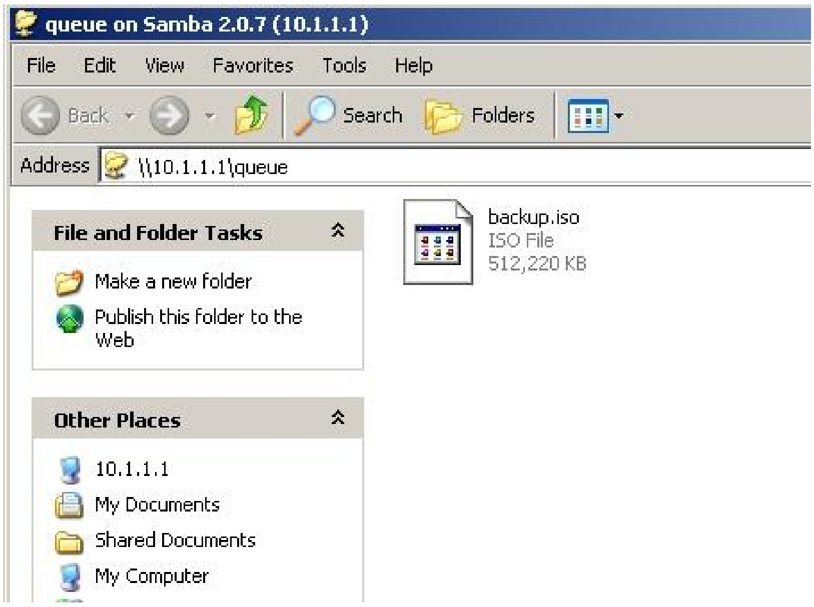
Precondition: Nero has been installed to the DL-2410 machine Windows computer.

Steps of Linux system backup:

- Run **maintenance**.
- Click **System**, and then click **Create backup ISO**.

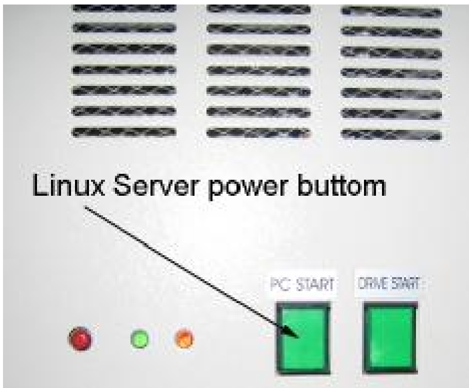


- Wait about 10 minutes; do not do anything to the machine.
- On the DL-2410 Windows PC, click **Start**.
- Click **Run**.
- Key in **\\10.1.1.1\queue** and then **enter**.
- Cut and paste the **backup.iso** file to Windows PC.



- Burn this file to a blank CD by **Burn image…** of **Nero**.

Steps of Linux system recovery:





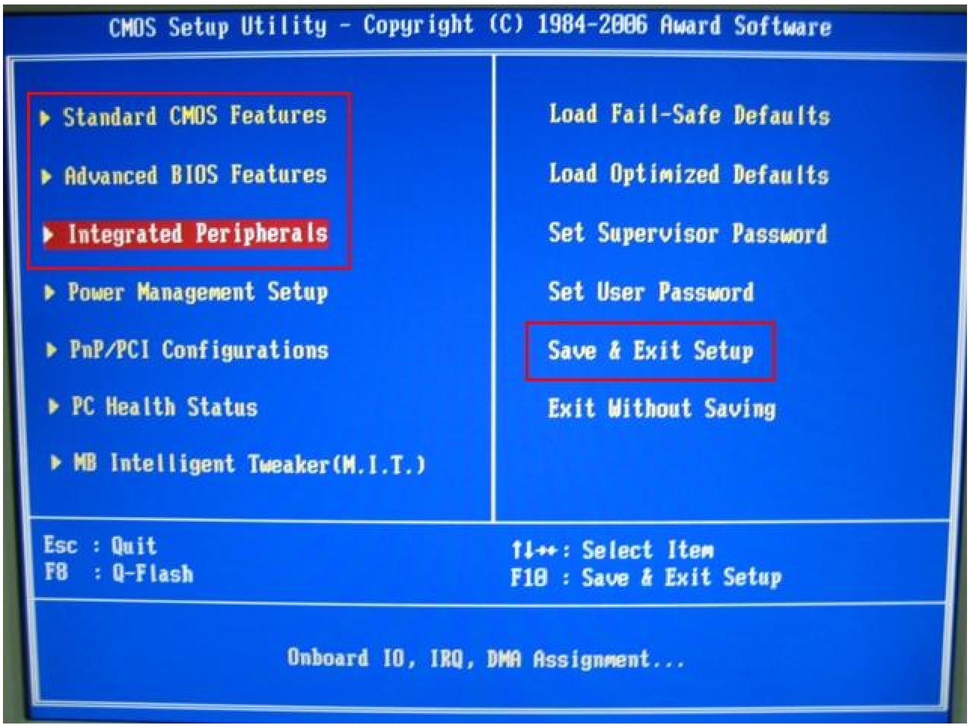
- Open the front panel of the machine.

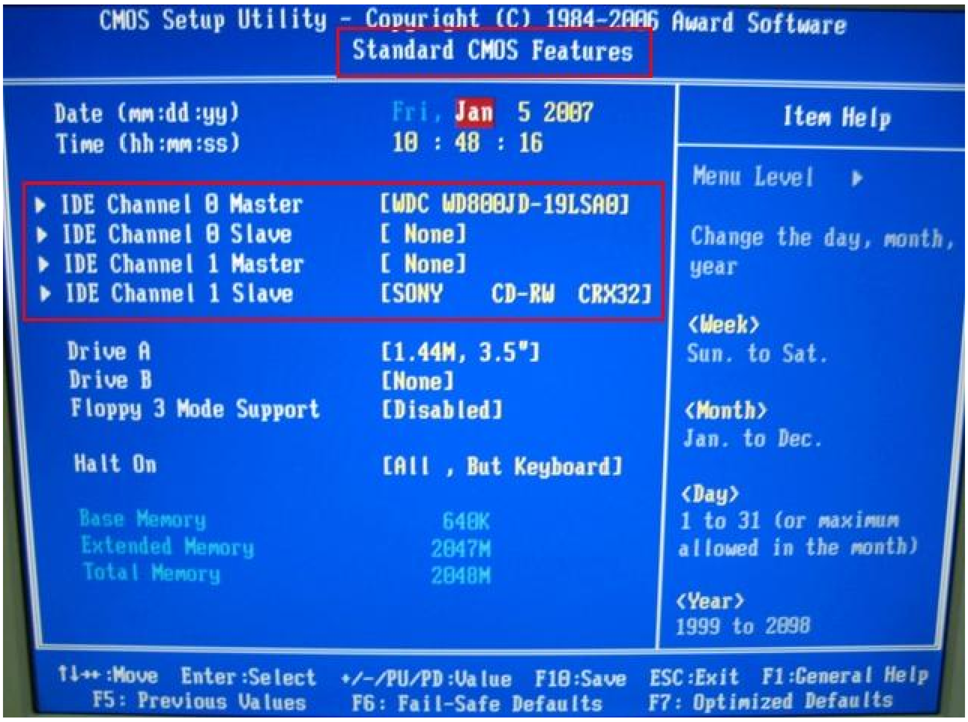


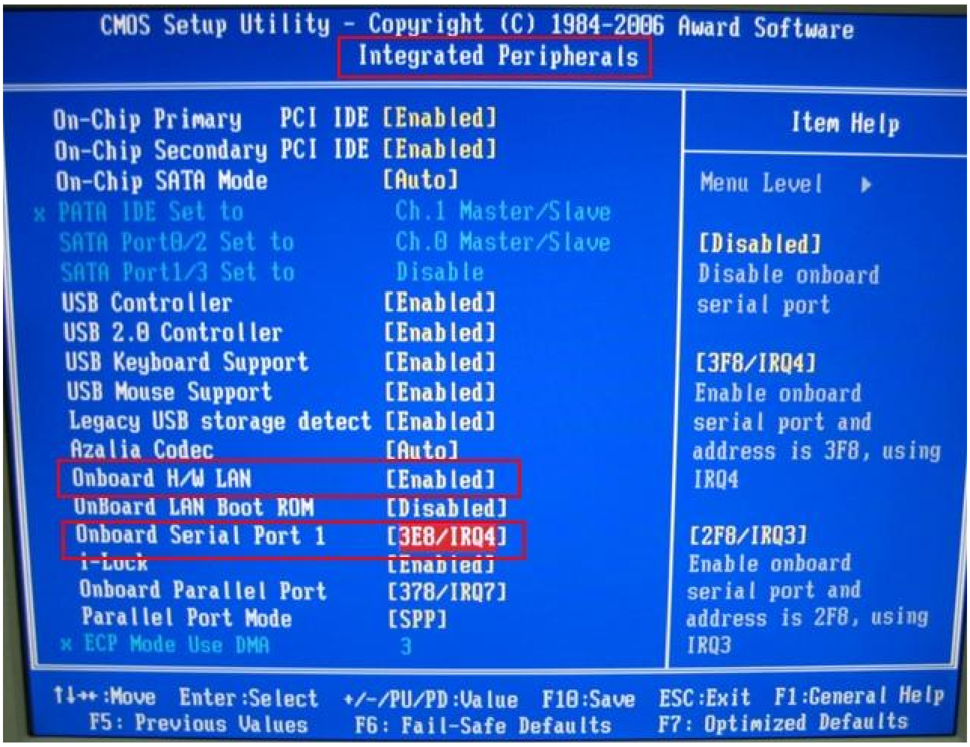
- Connect a keyboard and a monitor to the Linux Server motherboard.



Turn the Linux PC power on, on the keyboard press Delete key to enter BIOS interface (BIOS interfaces could be different depending on the motherboard model). Check the following options:


CMOS Setup Utility - Copyright (C) 1984-2006 Award Software
Standard CMOS Features
Advanced BIOS Features
Integrated Peripherals
Power Management Setup
PnP/PCI Configurations
PC Health Status
MB Intelligent Tweaker(M.I.T.)
Load Fail-Safe Defaults
Load Optimized Defaults
Set Supervisor Password
Set User Password
Save & Exit Setup
Exit Without Saving
Esc : Quit
F8 : Q-Flash
F10 : Save & Exit Setup
Onboard IO, IRQ, DMA Assignment...

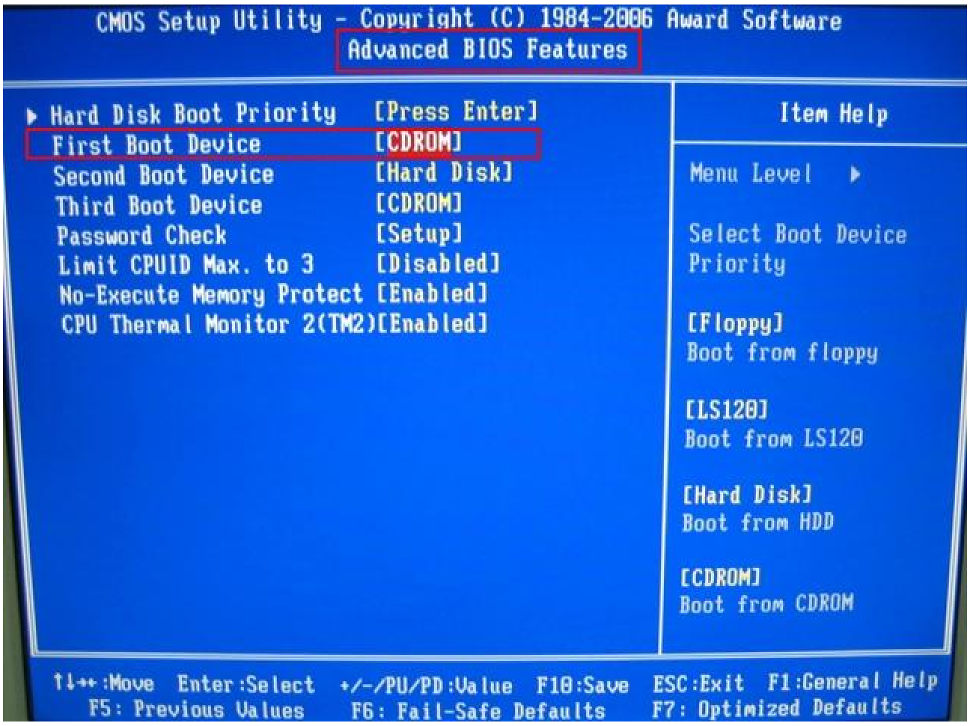

CMOS Setup Utility - Copyright (C) 1984-2006 Award Software
Standard CMOS Features
Date (mm:dd:yy) Fri, Jan 5 2007
Time (hh:mm:ss) 10 : 48 : 16
IDE Channel 0 Master [WDC WD800JD-19LSA0]
IDE Channel 0 Slave [None]
IDE Channel 1 Master [None]
IDE Channel 1 Slave [SONY CD-RW CRX32]
Drive A [1.44M, 3.5"]
Drive B [None]
Floppy 3 Mode Support [Disabled]
Halt On [All , But Keyboard]
Base Memory 640K
Extended Memory 2047M
Total Memory 2048M
Item Help
Menu Level
Change the day, month, year
<Week>
Sun. to Sat.
<Month>
Jan. to Dec.
<Day>
1 to 31 (or maximum allowed in the month)
<Year>
1999 to 2098
Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults



The Linux mother board has two COM port, it is set as:

COM1: **2F8**

COM2: **3E8**



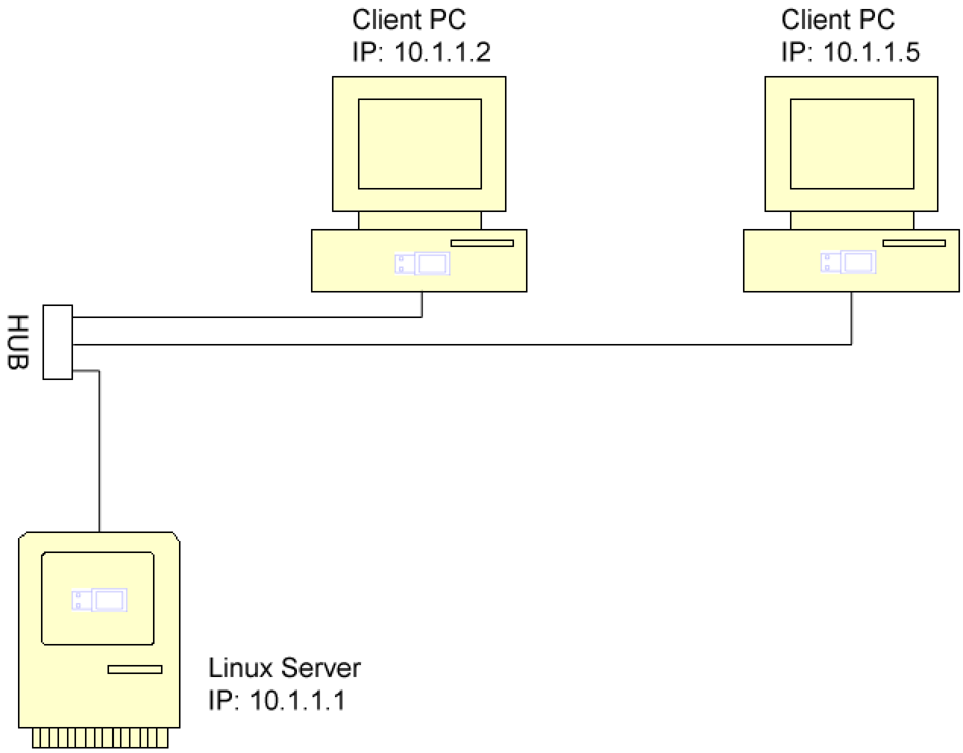
Usually the **BIOS** of the Linux PC motherboard has been configured in the factory, only the **First Boot Device** shall be re-configured after installing the external CD-Drive.

Steps:

- Insert the Linux recovery CD to the CD-ROM of the Linux PC.
- Press the Linux PC power button to turn Linux PC off.
- Press the Linux PC power button again to turn Linux PC on.
- Wait about 10 minutes, the Linux system will be recovered automatically, at this time you can see the installation information on the Linux LCD Panel.
- Finally you may be requested to enter a serial number, just press OK button on the Linux LCD panel, and then wait till finish; If you see “Clean up” message, just wait 5 minutes then go to next step.
- Press the Linux PC power button to turn Linux PC off,
- Press the Linux PC power button again to turn Linux PC on, and then eject the Linux Recovery CD immediately (otherwise the Linux system will be recovered again).

3.4 Client PC setup

DL-2410 is a network printer. User can connect up to 253 clients PC to the Linux PC via network.



PhotoSmart is the only software which can send orders to the Linux PC for printing.

To setup **PhotoSmart** on each PC, a dongle (e.g. license) is needed.

The computers talk to each other by TCP/IP protocol on the network.

The IP address of the Linux PC is 10.1.1.1, and it is fixed and cannot be changed; the IP address of client PC can be configured by user.

Purpose: To configure a new PC connected to DL-2410 machine for printing.

Precondition:

- The network card has been setup on the new PC;
- The new PC has been connected to the HUB via network cable.

Things required:

- A dongle for PhotoSmart

  The dongle for **PhotoSmart** and the dongle for Linux PC are different and cannot be exchanged.

- Dongle driver
- PhotoSmart setup program

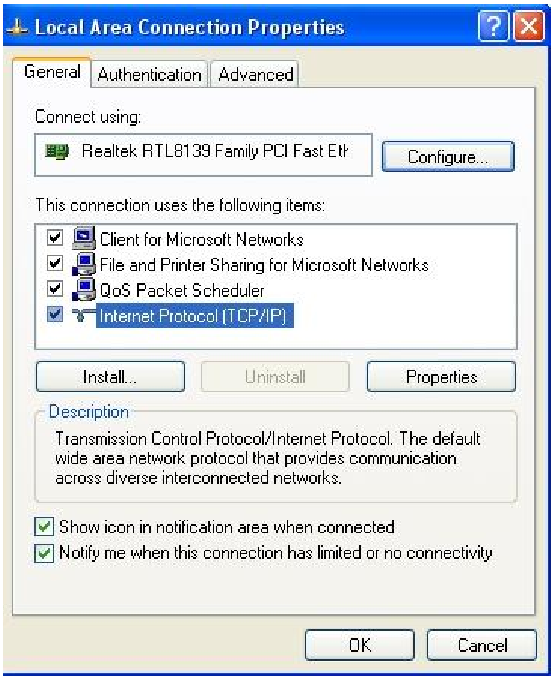
  - The dongle driver program **HASP-64** and the **PhotoSmart** setup program can be found in the **DL-2410** folder of the DL-2410 machine Windows PC hard disk.
  - The name of the dongle driver setup program could not be **HASP-64, and** the name of **PhotoSmart** setup program could be not as the technical upgrade. Ask the service people for the latest information.

- A spare USB2.0 port of the new PC motherboard.

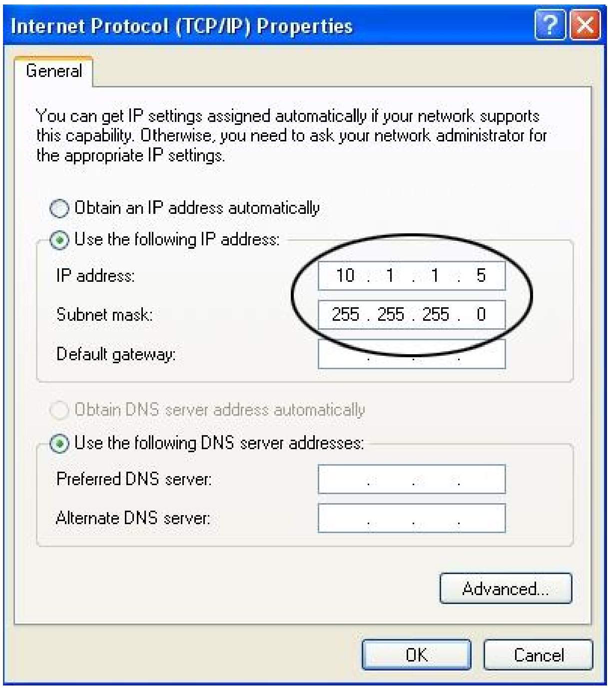
Steps:

1. Configure IP address for a new PC.

   - On the new PC, click **Start** and point to **settings,** then open **Control panel**.
   - Open **Network connections**。
   - Highlight **Local Area Connection**, and right click mouse, then select **Properties**.
   - Highlight **Internet Protocol (TCP/IP)** and click **Properties**.

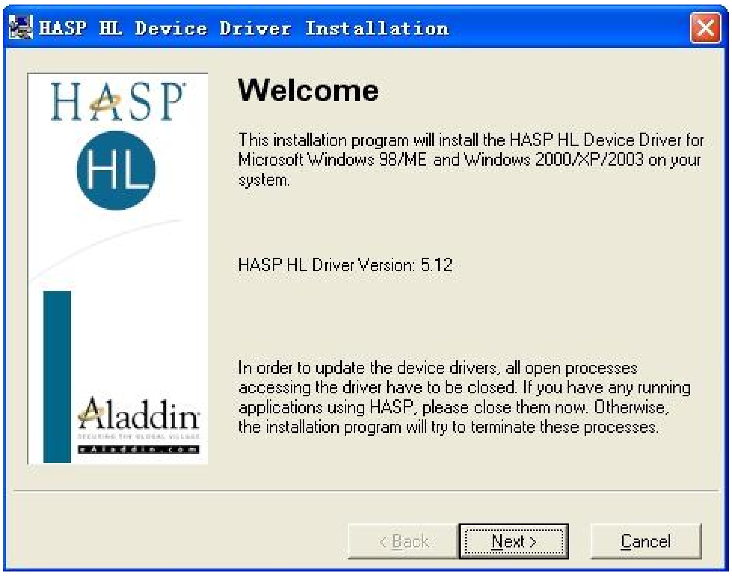


- Select **Use the following IP address:,** set the IP address and the Subnet mask as the illustration below:

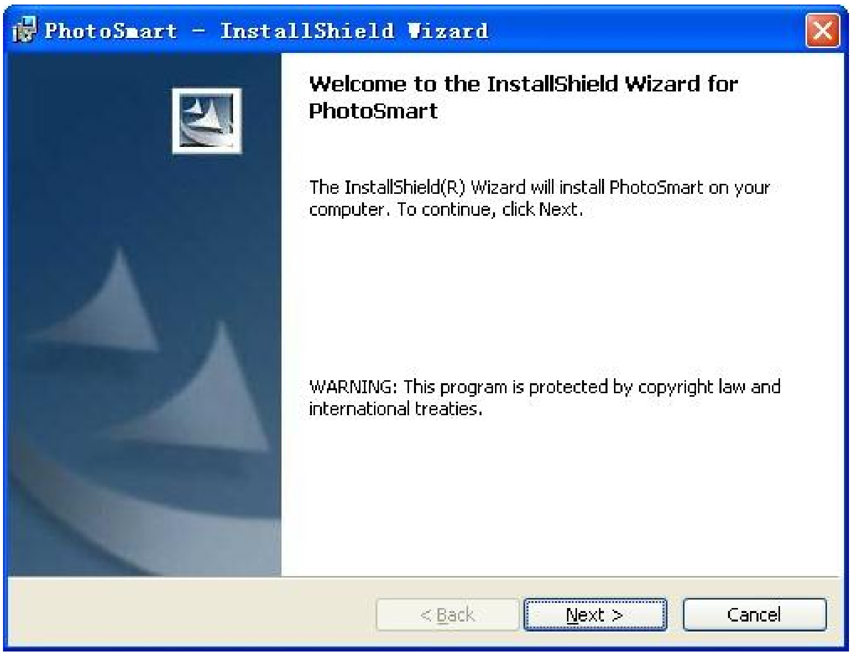


- Click **OK**.

2. Insert dongle to USB2.0 port of the motherboard.
3. Run **HASP-64** to install driver for the dongle.

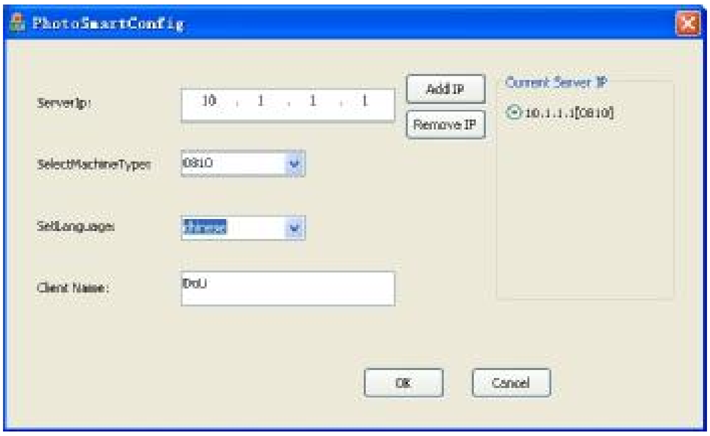


4. Run **PhotoSmart** to Install **PhotoSmart** on the new PC.



5. Set language file and Doli minilab model for the new PC.

   - On the new PC click **Start** and then **Programs**.
   - Find **Doli** folder and **PhotoSmart** folder, and then enter **PhotoSmartConfig**.



- Set **Language file name** to **english.lng**.
- Select Machine type of current Doli minilab.
- Click **OK**.

3.5 Unilateral valve of replenishing pump cleaning and replacement

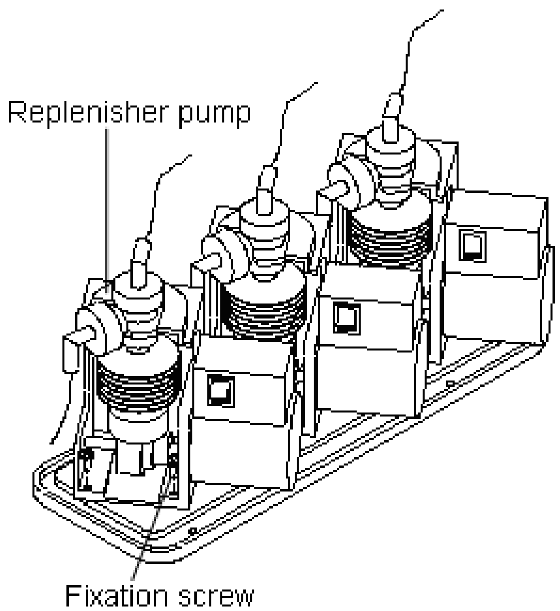
Purpose: To clean or replace a unilateral valve of a replenishing pump.

Tools required: Screw driver, container, protection glove.

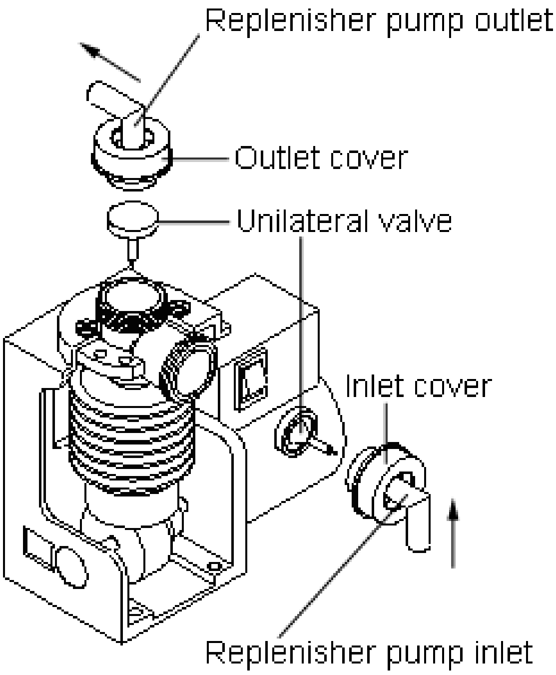
- To prevent chemical running over when cleaning or replacing a unilateral valve, use a container to contain the chemical during operation.
- Ware protection gloves during the operation to avoid chemical contact to your hands.

Steps:

1. Remove machine back cover.
2. Remove the fixation screws of the replenishing pump, and take out the replenishing pump from the machine.



3. Tweak out the cover of the replenishing pump, remove the inlet element and outlet element (be care, chemical will run out).



4. Take out the unilateral valves and wash or replace them.
5. Restore the inlet and outlet cover to the replenishing pump, make sure it is tight.

   Make sure the unilateral valve has been installed to the correct direction.

6. Screw down the fixation screws to restore the replenishing pump to the machine.
7. Restore the back cover.

3.6 Filter cleaning and replacement

Purpose: To clean or replace filters of working tank and to keep the chemical clean.

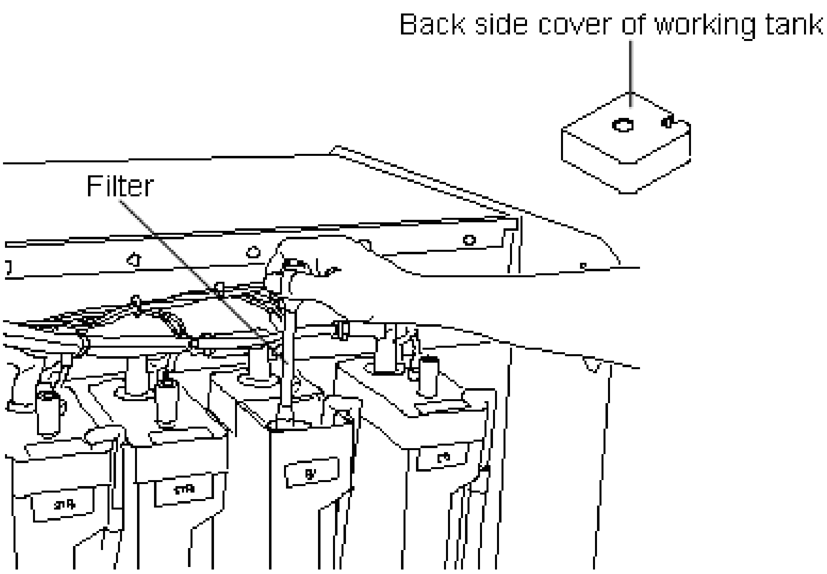
- Dirty chemical can produce dirty photos.
- Replace filter if necessary.

Tools required: Container.

Put a filter unit onto a container immediately after removing the filter from working tank to prevent chemical splattering.

Steps:

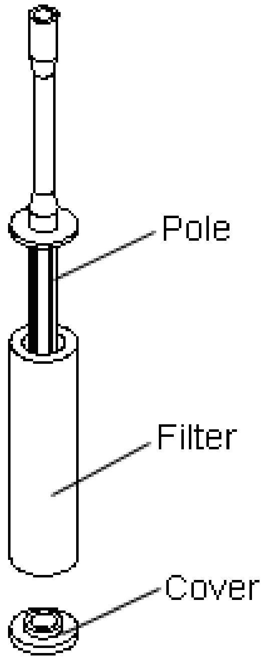
1. Take off the backside cover of a working tank, and take out the filter unit carefully.



2. Clean the filter units bwith water or replace the filters.

   To Replace a filter:

   - Remove cover, and remove the filter from the pole.
   - Clean the filter pole with water.
   - Install a new filter to the pole.
   - Restore the cover.



3. Restore the filter unit to the working tank.

4. Restore the left side cover.

3.7 Rack sleeve replacement

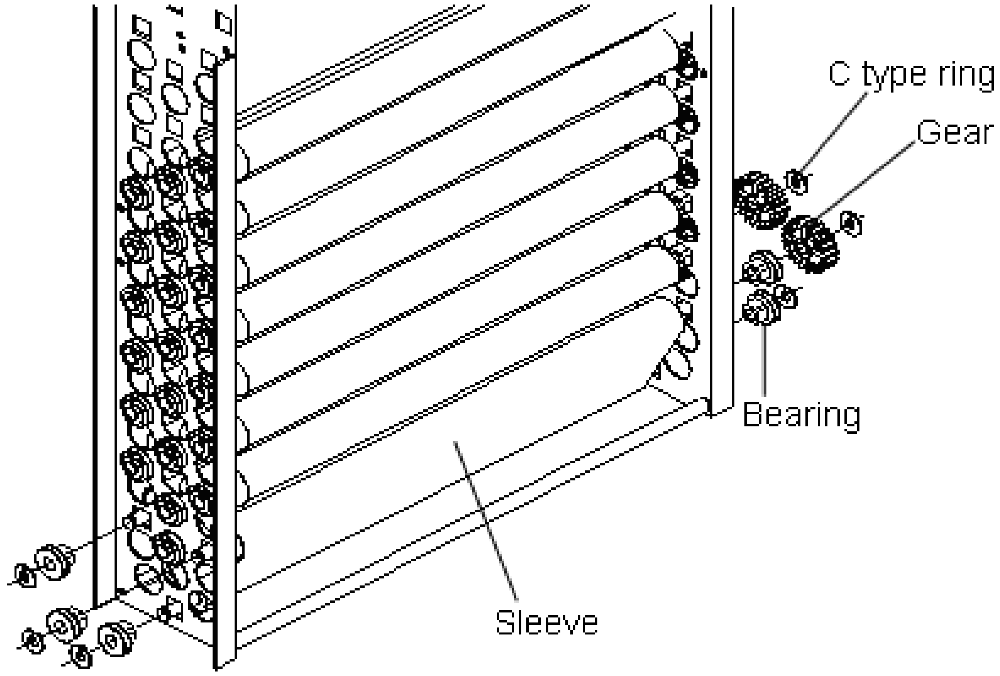
Purpose: To replace the sleeve of the rack.

The sleeve shall be replaced if it is damaged or ***Tran mutative*** or corrupted, or soiled heavily. Otherwise it could cause paper overlapping or paper jam.

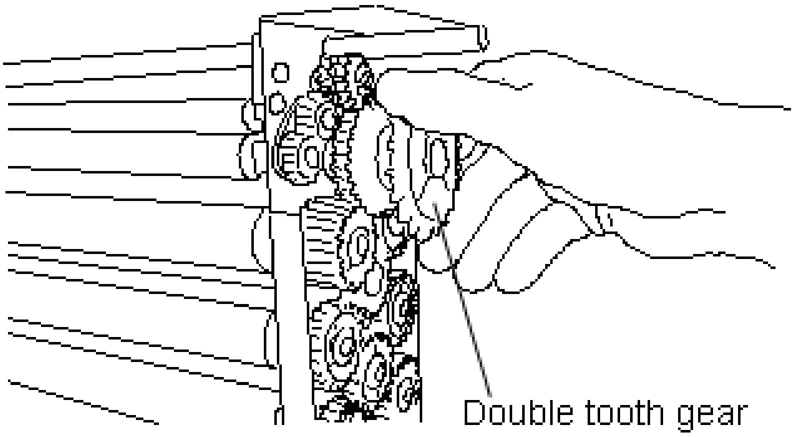
Tools required: Pliers, protection cushion.

Steps:

1. Remove racks from working tank.
2. Remove C type rings, gears and bearings on both sides of the rollers which are included inside the sleeve.



3. Remove the 3 rollers which are included inside the sleeve from the rack, and then remove the sleeve.
4. Replace the sleeve.
5. Reassemble the 3 rollers into the rack.
6. Restore bearings.
7. Restore gears.
8. Restore C type rings.
9. Turn the double tooth gear anticlockwise to make sure the sleeve runs well.



10. Restore rack to machine.

3.8 Rack cleaning and examination

Purpose: To check and clean racks to prevent paper scratching, jamming, and paper edge damage.

Tools required: Protection cushion, fluff brush, cotton cloth.

Steps:

1. Take out rack from working tank.
2. Clean rack with a fluffy brush and water to remove residuals from roller and gears.

   When cleaning, rotate the double tooth gear to turn the rollers so that rack could be cleaned thoroughly.
3. Clean sleeve with a fluffy brush and water.
4. Clean the crossovers with a cotton cloth and water.

   Don't use brush to clean the cross over, the surface of the cross over is very smooth, it could be damaged by brush or other hard objects that will cause paper scratch.
5. Check the following parts to be OK.
   - Springs
   - Rollers
   - Gears
   - C type rings
   - Sleeve
6. Restore the rack and the cross-over to machine.

3.9 Check and clean working tanks and pipes

Purpose:

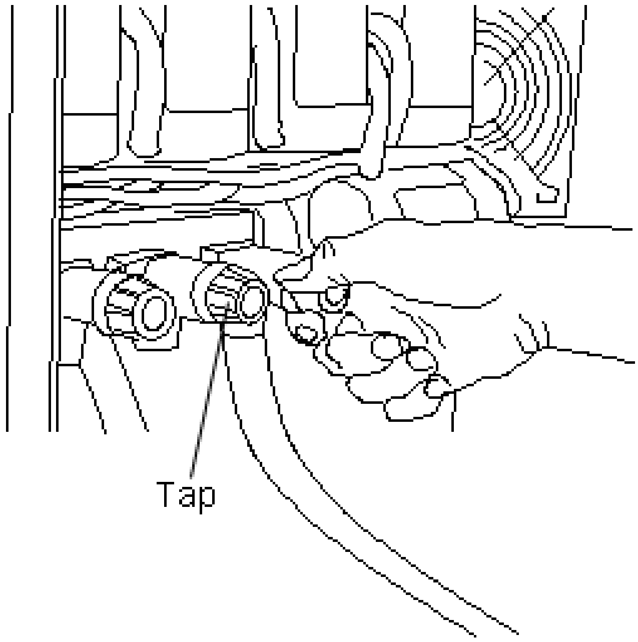
- To check working tanks and pipes in order to prevent potential chemical leaking.
- To clean working tank in order to keep chemical clean.

For convenience, this check can be performed while replacing chemical.

Tools required: Protection cushion.

Steps:

1. Connect a water pipe to the tap, place the other end of the pipe to a container and turn the tap counter-clockwise to drain off chemical.



2. Remove racks from working tank.
3. Check all connectors of the pipes, which must be sealed reliably.
4. Clean all working tanks using a fluff brush and water to remove residuals and stains.
5. Add water to working tanks until level is OK and power on the machine to start circulations for about 15 minutes, drain water. Repeat 1-3 times.
6. Restore everything to the machine.

3.10 Exposure platform disassembly

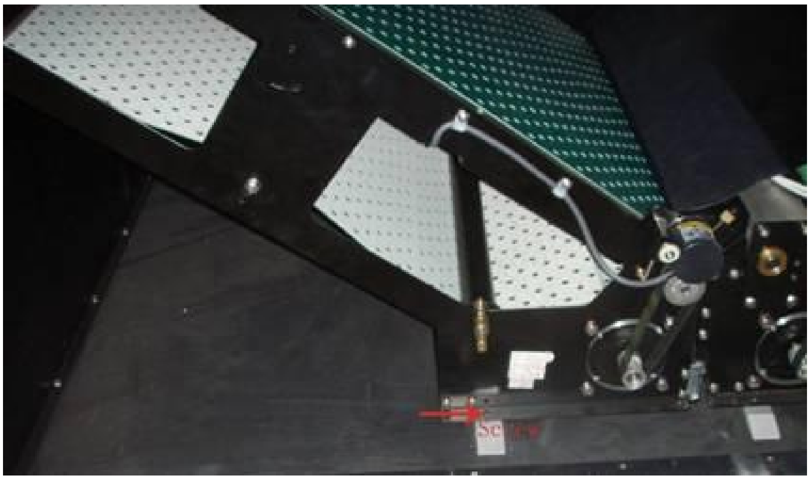
Precondition:

- Paper has been rewind to paper magazine.
- Machine has been shut down.

Tools required: Cross screw driver

Steps:

1. Open printer door.
2. Remove the 2 fixation screws of the exposure platform.



3. Pull out the exposure platform.

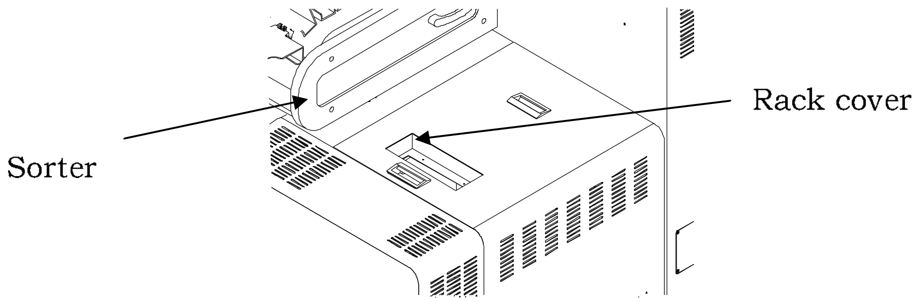
3.11 Raiser disassembly

Purpose: To disassemble raiser rack.

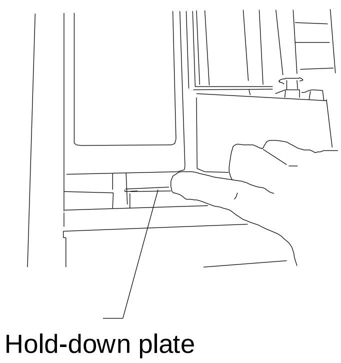
Tools required: None.

Steps:

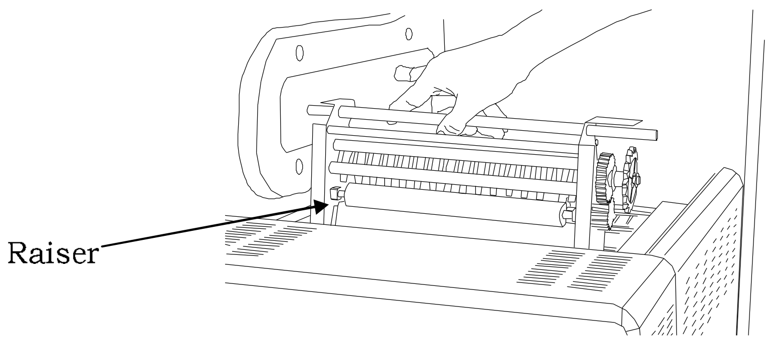
1. Remove the sorter, take away the rack cover



2. Poke the hold-down plate



3. Take out the raiser



3.12 Rack disassembly

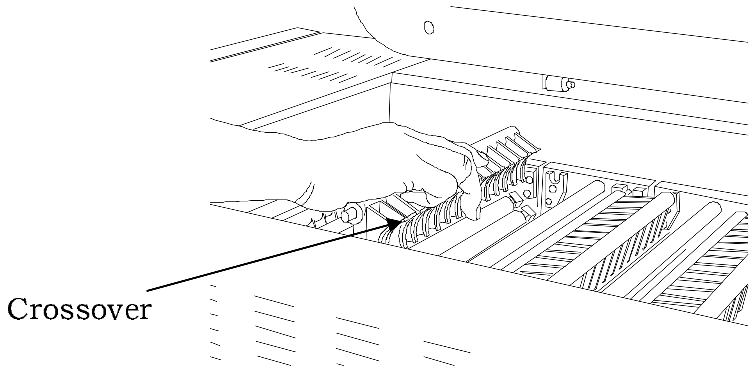
Purpose: To disassemble racks.

Tools required: None.

Steps:

1. Remove the sorter, take away the rack cover

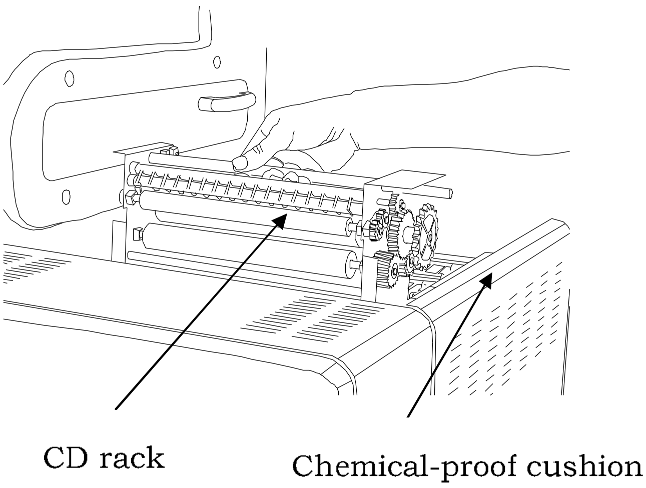
2. Take away the crossovers in sequence as follows



3. Put the chemical-proof cushion

4. Take out the racks in sequence as follows

N.B.: In order to avoid chemical inter-contamination, it is suggested to take out the rack slowly in a sequence from STB to CD.



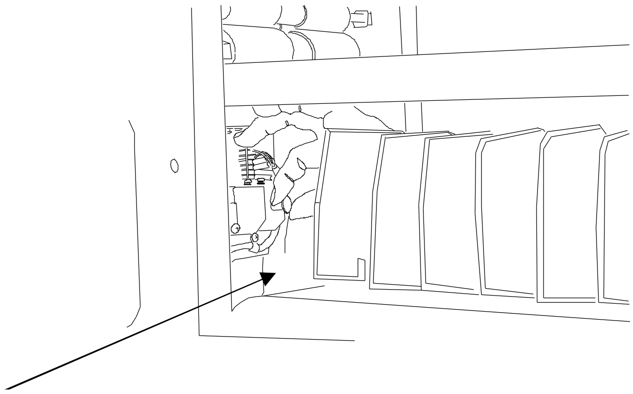
3.13 Photo-receiver disassembly

Purpose: To disassemble photo-receiver.

Tools required: none.

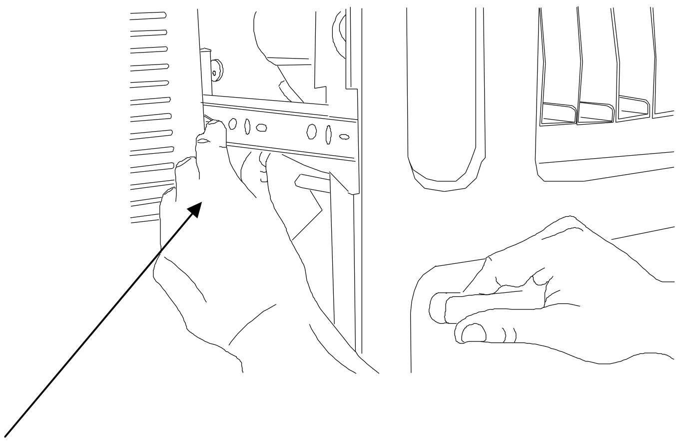
Steps:

1. Before taking out the photo-receiver, pull out the aero-plug that connects to the photo-receiver.



Aero plug

2. Move the photo-receiver away from the machine.



Fastener

3.14 Divider disassembly

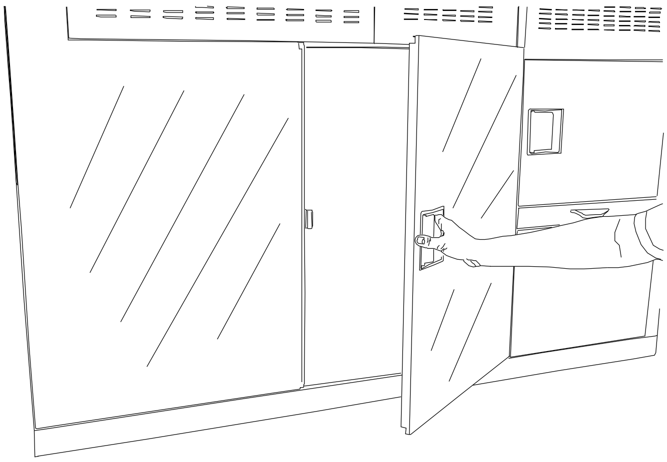
Purpose: To disassemble divider.

Tools required: screwdriver

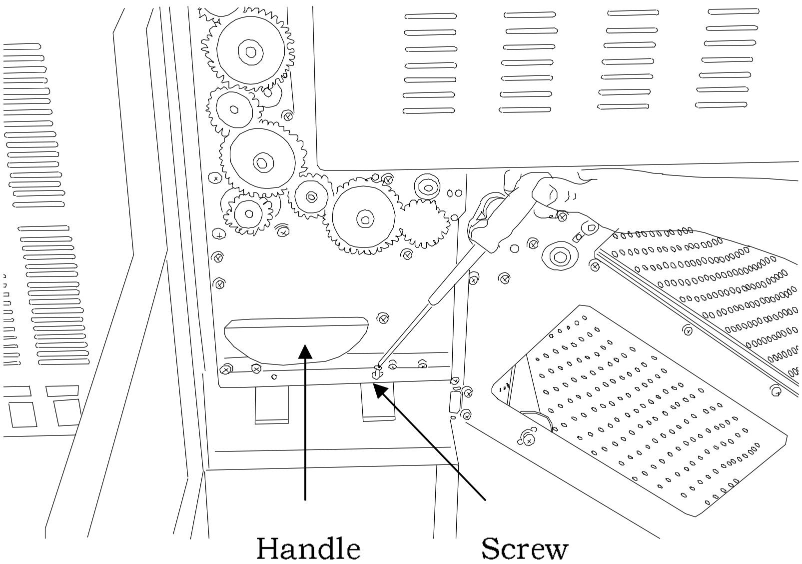
Steps:

3.14.1 Unwind the paper, turn off the machine.

3.14.2 Open the door of exposure



3.14.3 Loose the screw and take it out.



When assembling the divider, just put the guide rail into the runner and make sure they in position.

3.15 How to replace ribbon cartridge

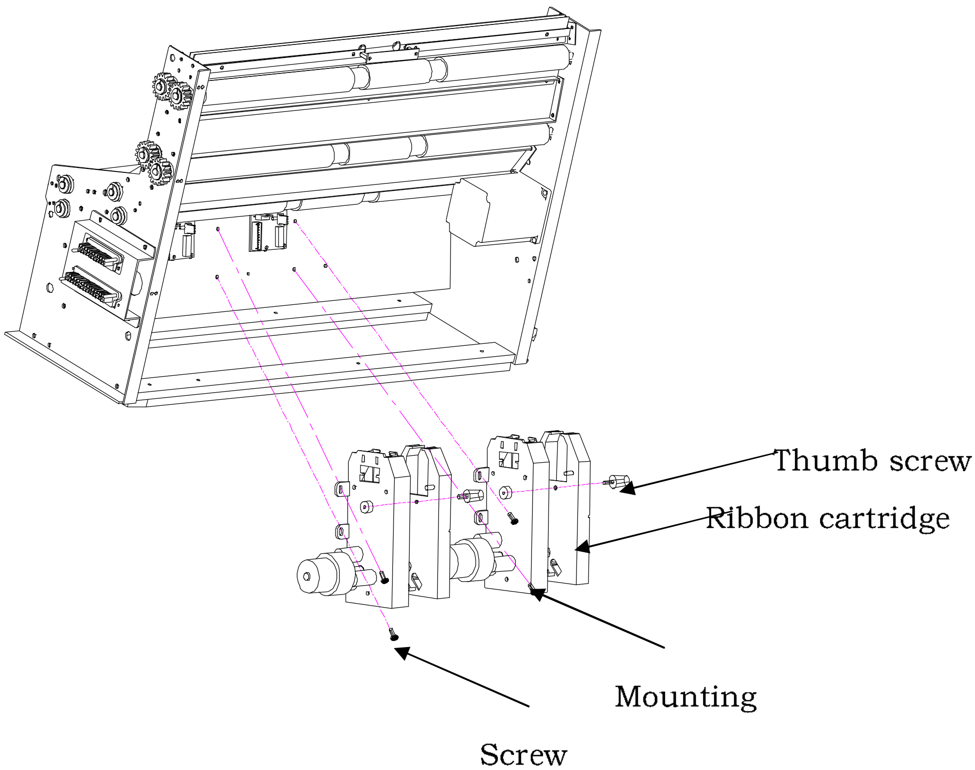
It is recommended to replace the ribbon cartridge when the back print becomes dim.

Purpose: To replace ribbon cartridge

Tools required: screwdriver.

Steps:

1. Open the door of exposure platform.
2. Loose one screw and take out the diver (two screws)
3. Take away the tension disc (two screws).
4. Take out mounting rig (three screws)



5. Loose the thumb screw, take out the old ribbon cartridge and replace it with a new one.

6. Put back the mounting rig.

N.B.: The distance between the pin and the upper steering deflector is around 0.4 mm. Put two pieces of paper between pin and upper steering deflector and fix

the back printer, and then remove the paper.

7. Put back the tension disc.
8. Assemble back printer.
9. Put back transferring rack and close the door.

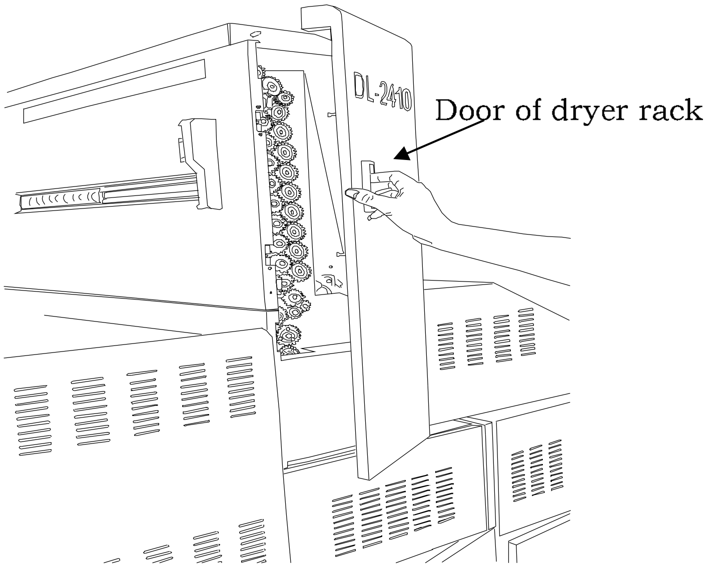
3.16 Dryer rack disassembly

Purpose: To replace the dryer rack.

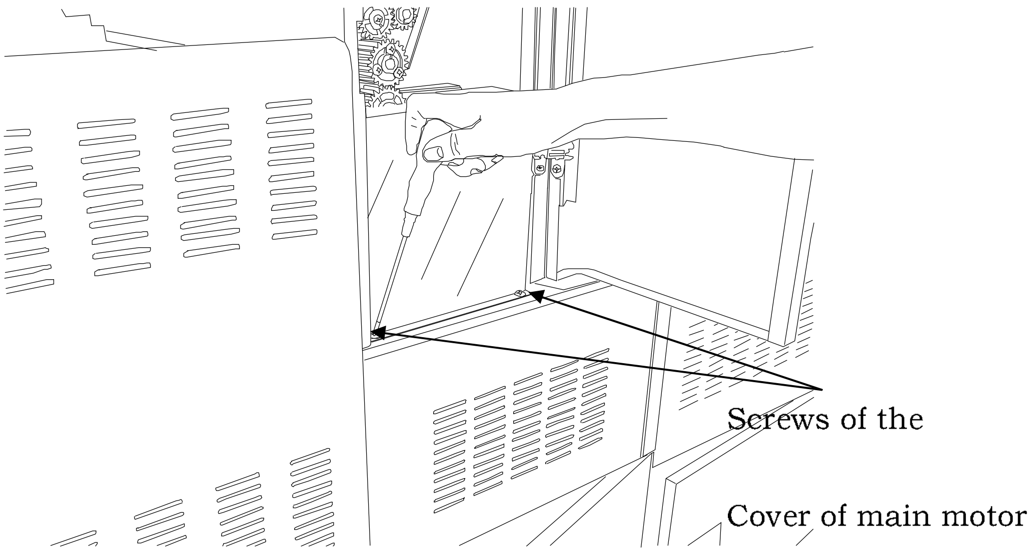
Tools required: screwdriver.

Steps:

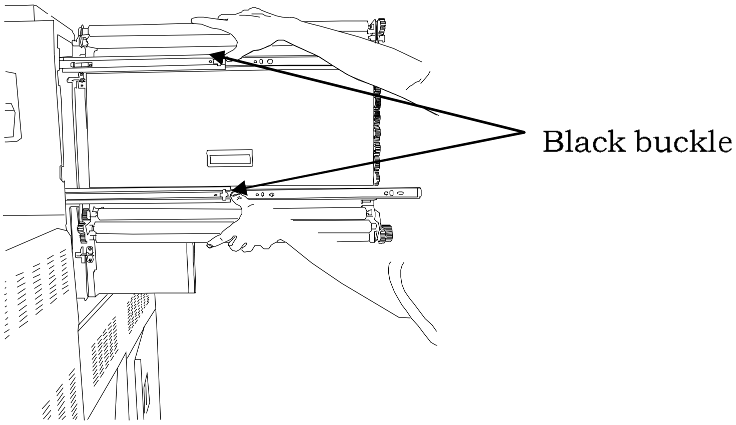
1. Open the door of the dryer rack.



2. Loose two screws of the cover of the main motor.



3. Pull out the dryer rack and poke up the black buckle as the illustration:



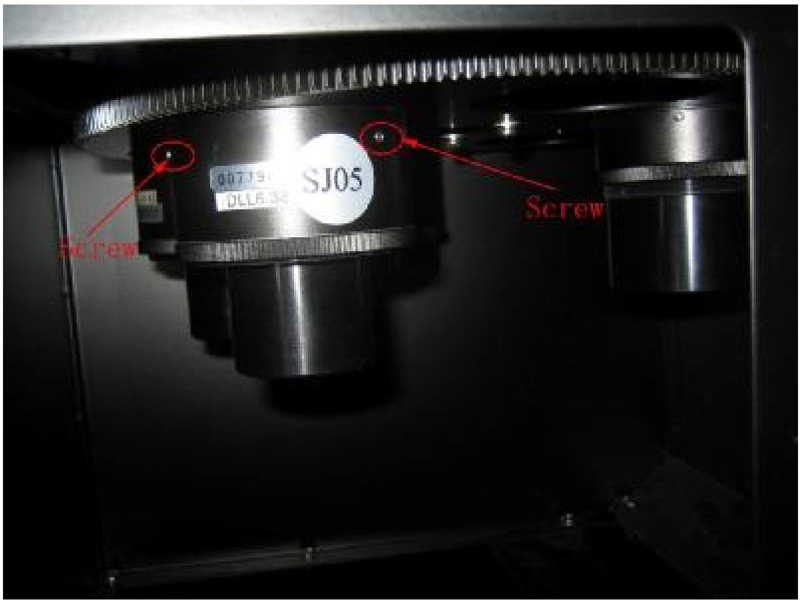
3.17 Lens focus adjustment

Purpose: To adjust lens focus.

Tools required: Ellen key (could be found in the accessories of the machine), tapes.

Steps:

1. Open the printer door，and loose the locking ring of the Lens.



2. For each Lens there are 2 screws for locking the focus, unscrew the 2 screws by Ellen key.
3. Paste tape on the Lens below and above the locking ring, close the printer door and send test print in PhotoSmart.
4. Open the printer door, rotate the Lens at small increment and make test print again.

   Make ring around test prints as the table below:

Test prints #	Angle of the Lens rotated
0	0°
1	30° anticlockwise
2	30° clockwise
3	60° anticlockwise
4	60° clockwise
5	90° anticlockwise
6	90° clockwise

   After the test prints comes out, mark the test prints immediately.

5. Pick up the best test print.

6. Turn the Lens to the corresponding angle of the best test print.
7. Screw down the 3 locking screws of the Lens and tighten the locking ring.

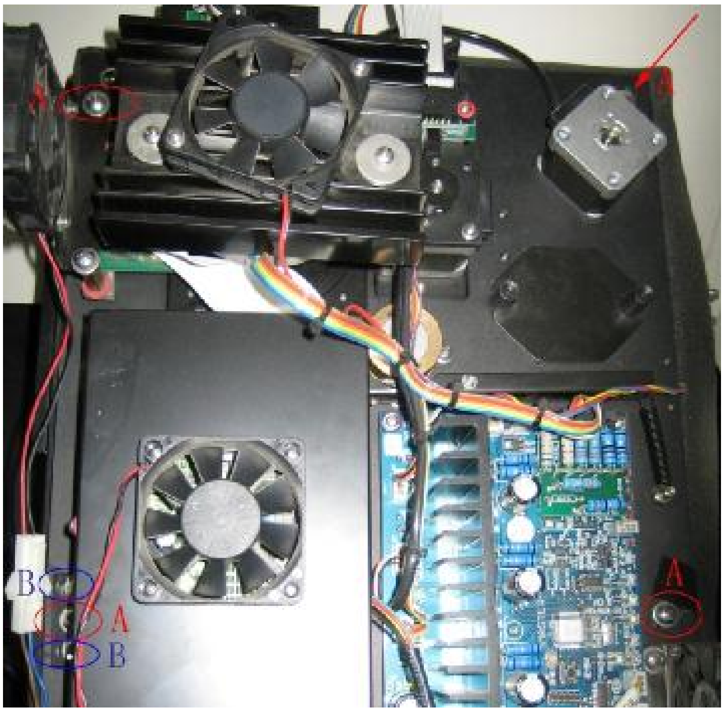
3.18 Skew adjustment

Purpose: Adjust exposure head to correct angle of which the exposure image is parallel with paper.

Tools required: Cross screw driver

Steps:

1. Open the door of exposure head.
2. There a 4 fixation screws (A) which fix the exposure head, and there 2 screws (B) which lock the exposure head angle; loose all these 6 screws.



3. Now exposure head can be rotated, try to rotate different angle and print test photo in **PhotoSmart**, until satisfied.
4. Screw down all these 6 screws.

If you only loose screw A without loosening screw B, then take out the exposure head from the machine and put it back, the exposure head angle will not change.

3.19 Image magnification calibration

Purpose: To calibrate the image magnification so that the image scale of photos and the monitor preview is the same.

Steps:

1. Print a test photo by **PhotoSmart**.
2. Modify Linux Registry:
   - On Windows PC click **Start**, then **Run**, key in **\\10.1.1.1\win-software** then enter.
   - Open **Iregedit**.
   - Specify **etc/lens/00x/magnification**, note down the original value.
   - To enlarge the exposure image on the paper, decrease the value of **magnification** (for example: -0.05); to reduce the exposure image on the paper, increase the value of **magnification** (for example: +0.05); click **Save now** after modify the value.
   - Specify etc/lens/000/magnification.
   - Modify the value to be the same as the value of **etc/lens/001/magnification**, after modify the value, click **Save now**.
3. Print test photo again, after photo coming out check magnification result, repeat the above procedure until satisfied.

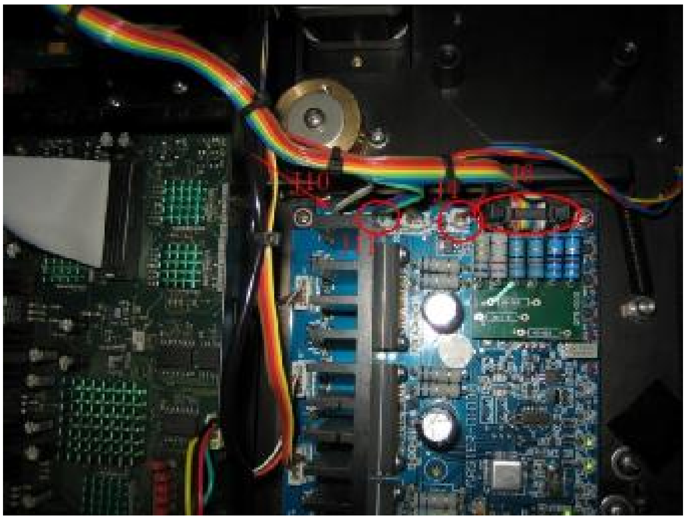
3.20 LED assembly replacement

Precondition: The machine has been shut down.

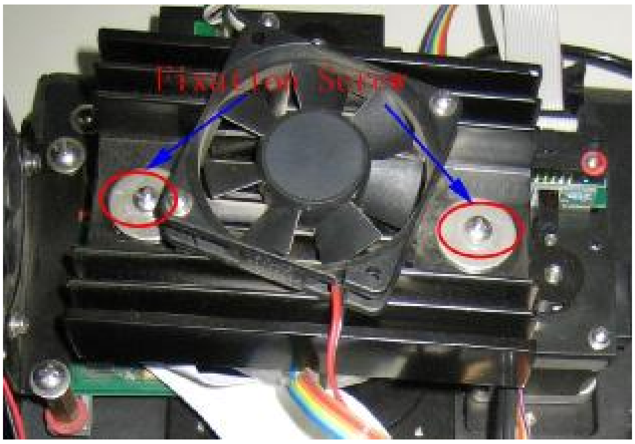
Tools required: Short screw driver

Steps:

1. On the Master-D103B PCB unplug the J4, J6, J10 and J11 plug.



2. Open the door of exposure head, and then on the LED assembly remove the 2 fixation screws.



3. Replace the LED assembly.
4. Screw down the 2 fixation screws of the LED and plug in the J4 and J6 plugs to the Master PCB.
5. Redo morning test for all paper magazines.

☞ 2.1 Morning setup

6. Redo Uniformity Mask calibration.

☞ 2.7 Uniformity calibration

3.21 Paper jam in cutter operation

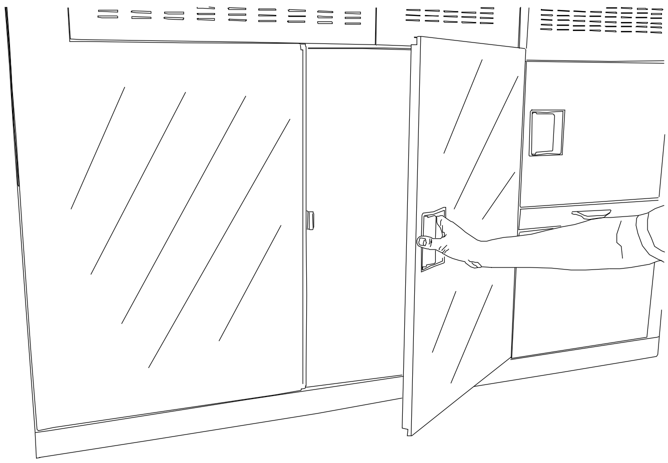
Precondition: The machine has been shut down, paper is unwound.

Purpose: To remove the paper piece jammed inside the cutter.

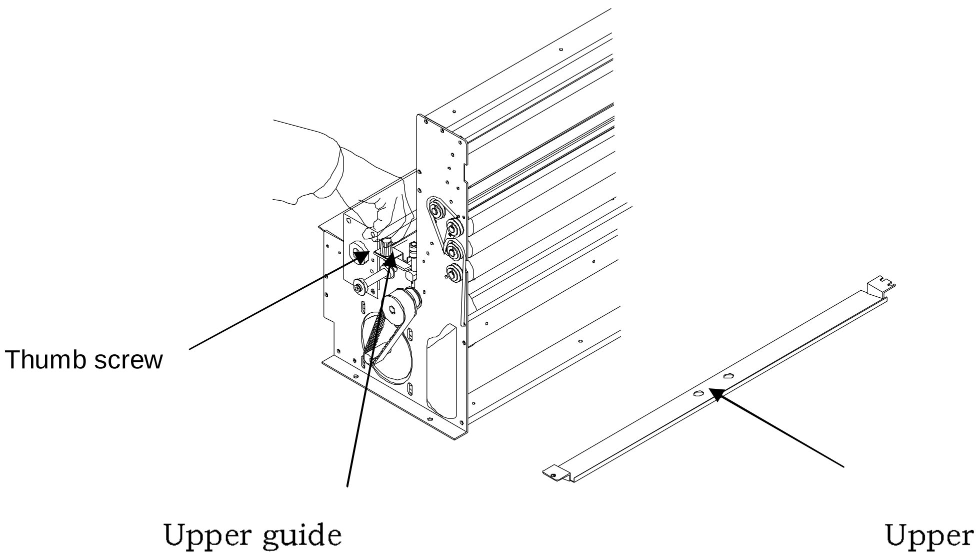
Tools required: Cross screw driver

Steps:

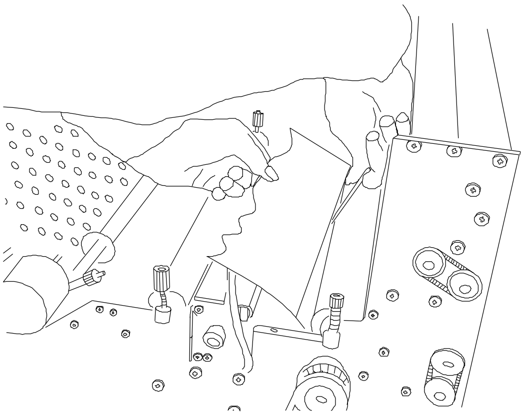
1. Open the exposure platform door



2. Take out the upper guide from the entrance



3. Cut the regulate part.

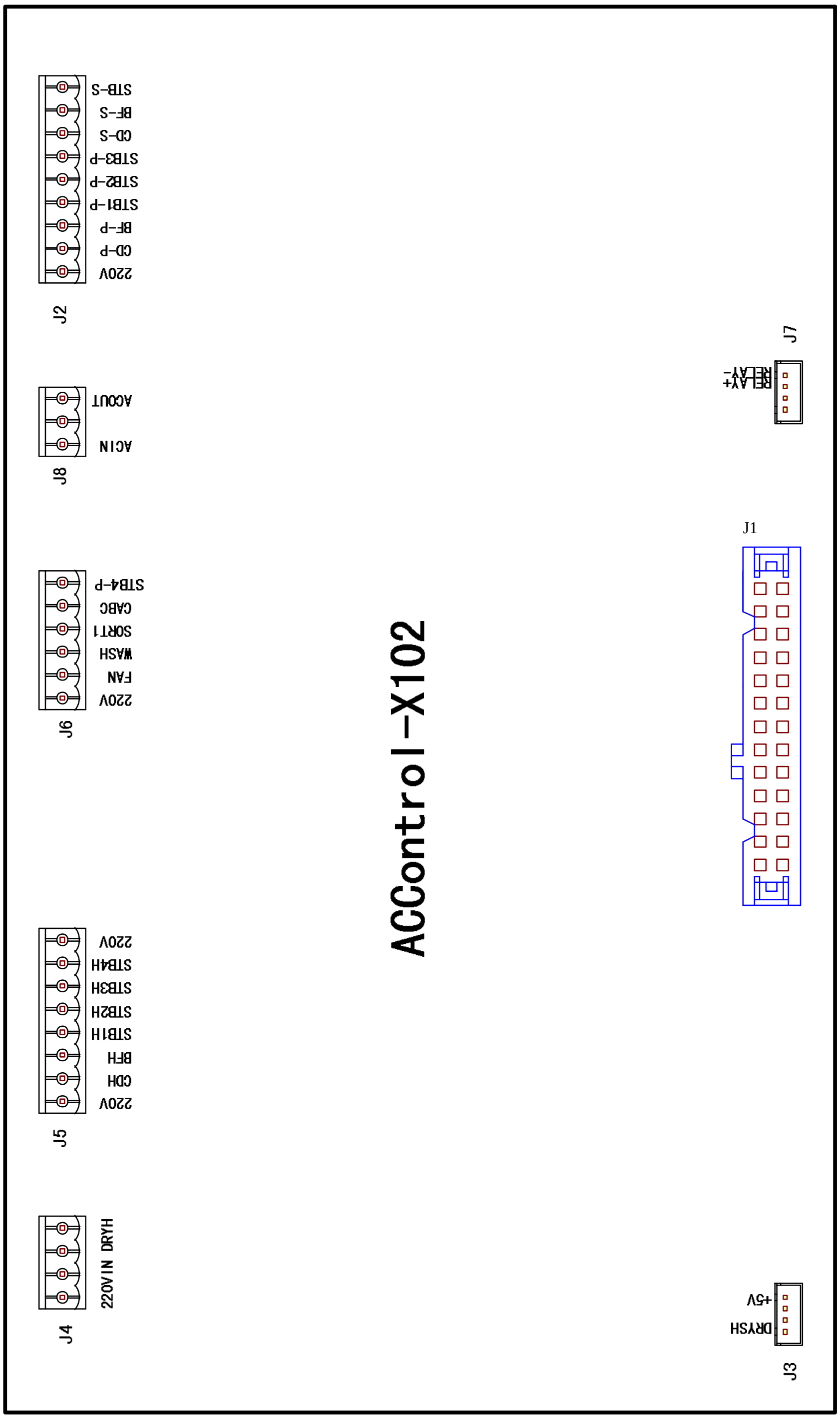


4

Chapter 4 Electrical parts and wiring diagram

This chapter describes the sensors and PCBs used in this machine and the wiring diagram.

4.1 ACControl-I102



Functions

- Supply power to components that use AC 220V such as main processing motor, fans, heaters, circulation pumps, replenishing pumps, control AC Contactor ON/OFF.

Adjustment for replacement

None

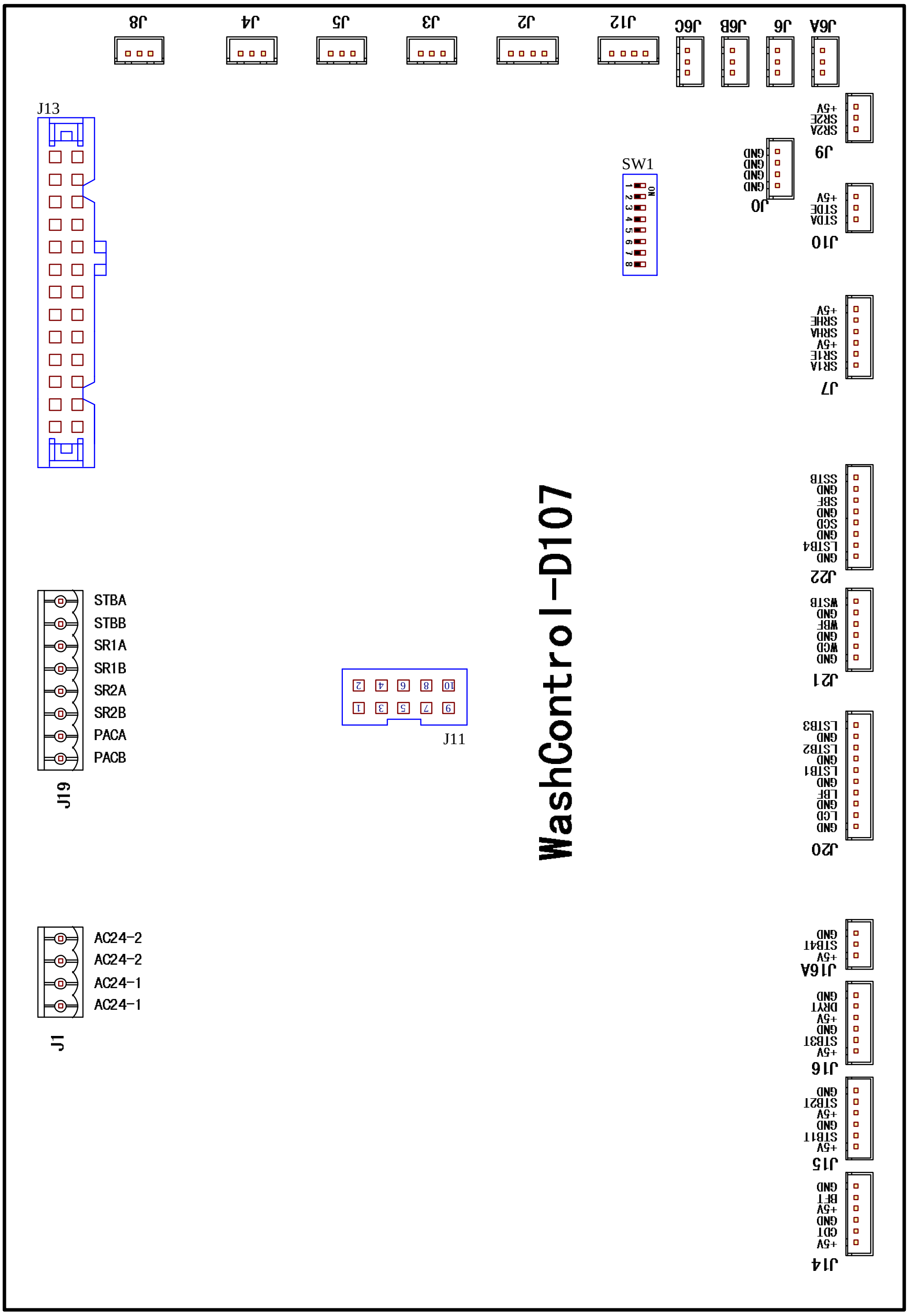
Disposition and description

Socket code	SN	Wire definition	Description
J1	1	STBSUP	STB replenish pump control signal
	2	BFSUP	BF replenish pump control signal
	3	CDSUP	CD replenish pump control signal
	4	STB3PUMP	STB3 circulation pump control signal
	5	STB2PUMP	STB2 circulation pump control signal
	6	STB1PIMP	STB1 circulation pump control signal
	7	BFPUMP	BF circulation pump control signal
	8	CDPUMP	CD circulation pump control signal
	9	CABC	Sprinkling pump control signal
	10	SORT-AC1	Standby
	11	WASHS	Paper processor motor control signal
	12	CDFANS	CD Cooling fan control system
	13	STB4HS	STB4 heater control signal
	14	STB3HS	STB3 heater control signal
	15	STB2HS	STB2 heater control signal
	16	STB1HS	STB1 heater control signal
	17	BFHS	BF heater control signal
	18	CDHS	CD heater control signal
	19	DRYHS	Dryer heater control signal
	20		
	21		
	22		

Socket code	SN	Wire definition	Description
	23		
	24		
	25	5V	5V power supply
	26	5V	5V power supply
J2	1	220V	AC220V Live wire
	2	CD-P	CD circulation pump
	3	BF-P	BF circulation pump
	4	STB1-P	STB1 circulation pump
	5	STB2-P	STB2 circulation pump
	6	STB3-P	STB3 circulation pump
	7	CD-S	CD replenish pump
	8	BF-S	BF replenish pump
	9	STB-S	STB replenish pump
J3	1	+5V	Standby
	2		
	3	DRYHS	
	4		
J4	1	220VIN	AC 220V live wire
	2		
	3	DRY	Dryer heater
	4		
J5	1	220V	AC220V Live wire
	2	CDH	CD heater
	3	BFH	BF heater
	4	STB1H	STB1 heater
	5	STB2H	STB2 heater
	6	STB3H	STB3 heater
	7	STB4H	STB4 heater

Socket code	SN	Wire definition	Description
	8	220V	AC 220V Live wire
J6	1	220V	AC 220V Live wire
	2	FAN	Standby
	3	WASH	Paper processor motor
	4	SORT1	Standby
	5	CABC	Sprinkling pump
	6	STB4-P	STB4 circulation pump
J7	1		
	2		
	3	RELAY+	AC Contactor control signal +
	4	RELAY-	AC Contactor control signal -
J8	1	ACIN	AC 220V live wire
	2		
	3	ACOUT	AC contactor control loop

4.2 WashControl-D107 PCB



Functions

- Receive temperature signal of working tanks and dryer from temperature sensors.
- Receive level signal of working tanks, replenisher tanks and waste tanks from level sensors.
- Receive signal of sorter sensors.
- Control temperatures of working tanks.

Adjustment for replacement

- Set DIP switch to be the same as the previous board.

#	Factory default setting
1	OFF
2	OFF
3	OFF
4	OFF
5	OFF
6	OFF
7	OFF
8	ON

- Re-adjust trimmers for temperature calibration.

2.4 Temperature calibration

Disposition and description

<table>
<tr><th>Socket code</th><th>SN</th><th>Wire definition</th><th>Description</th></tr>
<tr><td rowspan="4">J0</td><td>1</td><td rowspan="4">GND</td><td rowspan="4">GND</td></tr>
<tr><td>2</td></tr>
<tr><td>3</td></tr>
<tr><td>4</td></tr>
<tr><td rowspan="4">J1</td><td>1</td><td>AC24 V1</td><td rowspan="4">AC 24V Power supply</td></tr>
<tr><td>2</td><td>AC24 V1</td></tr>
<tr><td>3</td><td>AC24 V2</td></tr>
<tr><td>4</td><td>AC24 V2</td></tr>
<tr><td rowspan="2">J2</td><td>1</td><td rowspan="2"></td><td rowspan="2">Main serial port</td></tr>
<tr><td>2</td></tr>
</table>

Socket code	SN	Wire definition	Description
	3		
	4		
J3	1	SLT1	Standby
	2	SLR1	
	3	GND	
J4	1	SLT2	Serial port2
	2	SLR2	
	3	GND	
J5	1	SLT3	Serial port3
	2	SLR3	
	3	GND	
J6	1	+5V	Standby
	2	STD2E	
	3	STD2A	
J6A		+5V	Standby
		STD3E	
		STD3A	
J6B		+5V	Standby
		STD4E	
		STD4A	
I6C	1	+5V	Standby
	2	STD5E	
	3	STD5A	
J7	1	+5V	Standby
	2	SRHE	
	3	SRHA	
	4	+5V	
	5	SR1E	

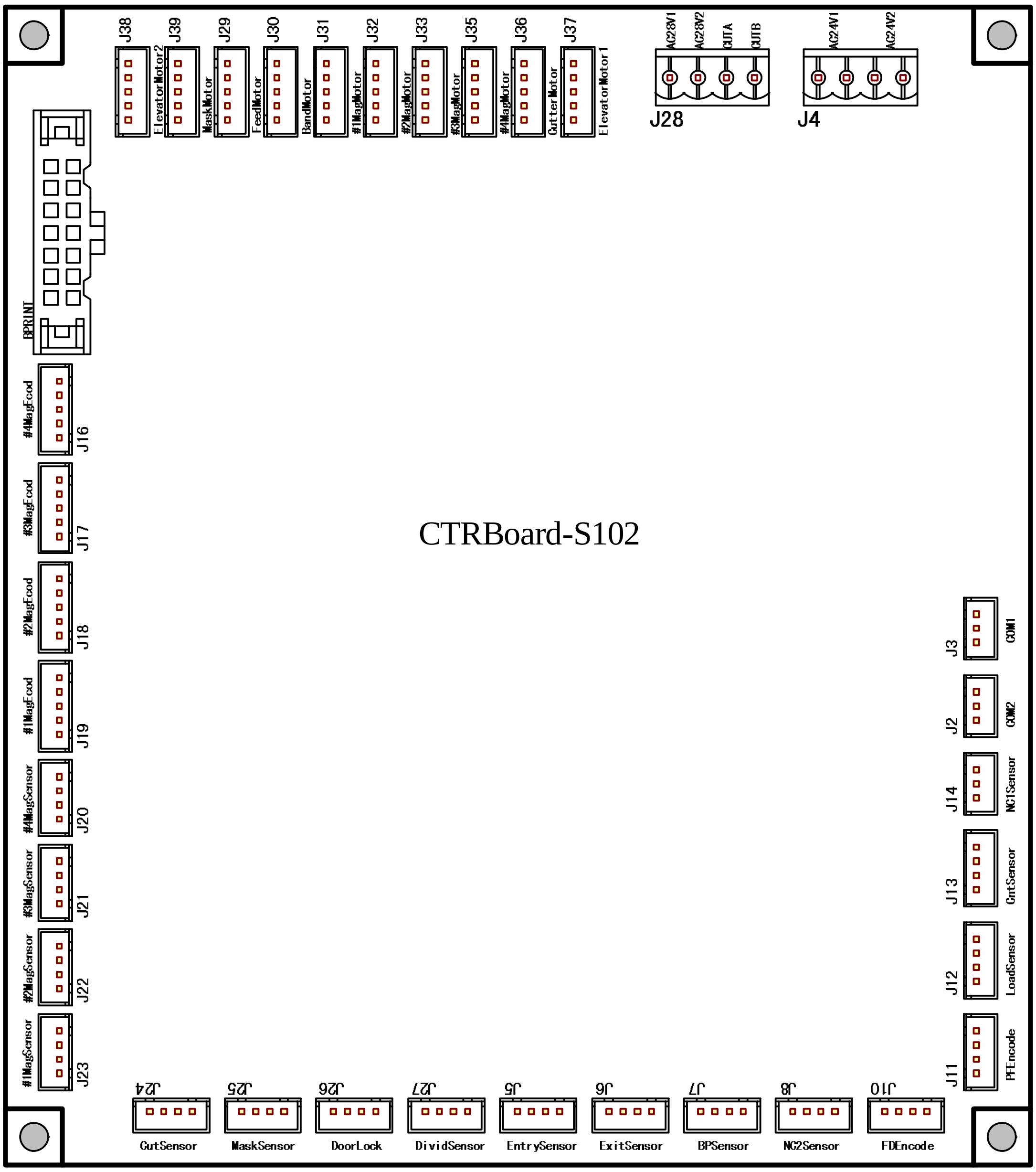
Socket code	SN	Wire definition	Description
	6	SR1A	
J8	1	WASHS	Standby
	2	GND	
	3	GND	
J9	1	+5V	Power of sorter sensor
	2	SR2E	Sorter sensor receiver
	3	SR2A	Sorter sensor emitter
J10	1	+5V	Standby
	2	SR1E	
	3	SR1A	
J12	1		Master Serial port
	2		
	3		
	4		
J13	1	STBSUP	STB replenish pump control signal
	2	BFSUP	BF replenish pump control signal
	3	CDSUP	CD replenish pump control signal
	4	STB3 PUMP	STB3 circulation pump control signal
	5	STB2 PUMP	STB2 circulation pump control signal
	6	STB1 PUMP	STB1 circulation pump control signal
	7	BFPUMP	BF circulation pump control signal
	8	CDPUMP	CD circulation pump control signal
	9	CABC	Sprinkling pump control signal
	10	SORT-AC1	Standby
	11	WASHS	Paper processor motor control signal
	12	CDFANS	CD cooling fan control signal
	13	STB4HS	STB4 heater control signal
	14	STB3HS	STB3 heater control signal

Socket code	SN	Wire definition	Description
	15	STB2HS	STB2 heater control signal
	16	STB1HS	STB1 heater control signal
	17	BFHS	BF heater control signal
	18	CDHS	CD heater control signal
	19	DRYHS	Dryer heater control signal
	20		
	21		
	22	STB4PUMP	STB4 circulation pump control signal
	23		
	24		
	25	+5V	Power supply
	26	+5V	Power supply
J14	1	5V	CD temperature sensor 5V
	2	CDT	CD temperature sensor signal
	3	GND	CD temperature sensor shield
	4	5V	BF temperature sensor 5V
	5	BFT	BF temperature sensor signal
	6	GND	CD temperature sensor shield
J15	1	5V	STB1 temperature sensor 5V
	2	STB1T	STB1 temperature sensor signal
	3	GND	STB1temperature sensor shield
	4	5V	STB2 temperature sensor signal
	5	STB2T	STB2 temperature sensor signal
	6	GND	STB2 temperature sensor shield
J16	1	5V	STB3 temperature sensor 5V
	2	STB3T	STB3 temperature sensor signal
	3	GND	STB3 temperature sensor shield
	4	5V	Dryer temperature sensor 5V

Socket code	SN	Wire definition	Description
	5	DRYH	Dryer temperature sensor signal
	6	GND	Dryer temperature sensor shield
J16A	1	+5V	STB4temperature sensor 5V
	2	STB4T	STB4 temperature sensor signal
	3	GND	STB4 temperature sensor shield
J19	1	PACB	Photo receiver motor
	2	PACA	
	3	SR2B	Sorter motor
	4	SR2A	
	5	SR1B	Standby
	6	SR1A	
	7	STBB	
	8	STBA	
J20	1	LSTB3	STB3 level sensor signal
	2	GND	STB3 level sensor shield
	3	LSTB2	STB2 level sensor signal
	4	GND	STB2 level sensor shield
	5	LSTB1	STB1 level sensor signal
	6	GND	STB1 level sensor shield
	7	LBF	BF level sensor signal
	8	GND	BF level sensor shield
	9	LCD	CD level sensor signal
	10	GND	CD level sensor shield
J21	1	WSTB	STB waste level sensor signal
	2	GND	STB waste level sensor shield
	3	SBF	BF waste level sensor signal
	4	GND	BF waste level sensor shield
	5	WCD	CD waste level sensor signal

Socket code	SN	Wire definition	Description
	6	GND	CD waste level sensor shield
J22	1	SSTB	STB replenishing level sensor signal
	2	GND	STB replenishing level sensor shield
	3	SBF	BF replenish level sensor signal
	4	GND	BF replenish level sensor shield
	5	SCD	CD replenish level sensor signal
	6	GND	CD replenish level sensor shield
	7	LSTB4	STB4 level sensor signal
	8	GND	STB4 level sensor shield

4.3 CTRBoard-S102



Functions

- Supply power to paper loading step motor, exposure platform synch belt step motor, and cutter motor.
- Receive signal from paper inlet sensor, paper loading sensor, STA sensor, cutter sensor, and start sensor.
- Receive signal from paper magazine ID sensor.

Disposition and description

Socket code	SN	Wire definition	Description
J2	1	TXD	STANDBY
	2	RXD	
	3	GND	
J3	1	RXD	Serial Communication11
	2	TXD	
	3	GND	
J4	1	AC24V1	24V power supply
	2		
	3	AC24V2	24V power supply
	4		
J5	1	GND	Divider Entrance Sensor GND
	2	EntrySensor1	Divider Entrance Sensor Signal 1
	3	EntrySensor2	Divider Entrance Sensor Signal 2
	4	+5V	Divider Entrance Sensor Power Supply
J6	1	GND	Divider Exit Sensor GND
	2	ExitSensor1	Divider Exit Sensor Signal 1
	3	ExitSensor2	Divider Exit Sensor Signal 2
	4	+5V	Divider Exit Sensor Power Supply
J7	1	GND	STANDBY
	2	BPSensor1	
	3	BPSensor2	

Socket code	SN	Wire definition	Description
	4	+5V	
J8	1	GND	STANDBY
	2	NC2Sensor1	
	3	NC2Sensor2	
	4	+5V	
J10	1	GND	Paper advance Encoder GND
	2	GND	Paper advance Encoder GND
	3	FDEncode2	Paper advance Encoder Signal
	4	+5V	Paper advance Encoder Power Supply
J11	1	GND	Platform Encoder GND
	2	GND	Platform Encoder GND
	3	PFEncode	Platform Encoder Signal
	4	+5V	Platform Encoder Power Supply
J12	1	GND	Paper Loading Sensor GND
	2	LoadSensor1	Paper Loading Sensor Signal 1
	3	LoadSensor2	Paper Loading Sensor Signal 2
	4	+5V	Paper Loading Sensor Power Supply
J13	1	GND	STA Sensor GND
	2	CnSensor1	STA Sensor Signal 1
	3	CnSensor2	STA Sensor Signal 2
	4	+5V	STA Sensor Power Supply
J14	1	GND	STANDBY
	2	NC1Sensor	
	3	+5V	
J16	1	#4MagEcod1	STANDBY
	2	#4MagEcod2	
	3	#4MagEcod3	
	4	#4MagEcod4	

Socket code	SN	Wire definition	Description
	5	GND	
J17	1	#3MagEcod1	#3 cassette encode 1
	2	#3MagEcod2	#3 cassette encode 2
	3	#3MagEcod3	#3 cassette encode 3
	4	#3MagEcod4	#3 cassette encode 4
	5	GND	#3 cassette encode GND
J18	1	#2MagEcod1	#2 cassette encode 1
	2	#2MagEcod2	#2 cassette encode 2
	3	#2MagEcod3	#2 cassette encode 3
	4	#2MagEcod4	#2 cassette encode 4
	5	GND	#2 cassette encode GND
J19	1	#1MagEcod1	#1 cassette encode 1
	2	#1MagEcod2	#1 cassette encode 2
	3	#1MagEcod3	#1 cassette encode 3
	4	#1MagEcod4	#1 cassette encode 4
	5	GND	#1 cassette encode GND
J20	1	GND	STANDBY
	2	#4MagSensor1	
	3	#4MagSensor2	
	4	+5V	
J21	1	GND	#3 Cassette Sensor GND
	2	#3MagSensor1	#3 Cassette Sensor Signal 1
	3	#3MagSensor2	#3 Cassette Sensor Signal 2
	4	+5V	#3 Cassette Sensor Power Supply
J22	1	GND	#2 Cassette Sensor GND
	2	#2MagSensor1	#2 Cassette Sensor Signal 1
	3	#2MagSensor2	#2 Cassette Sensor Signal 2
	4	+5V	#2 Cassette Sensor Power Supply

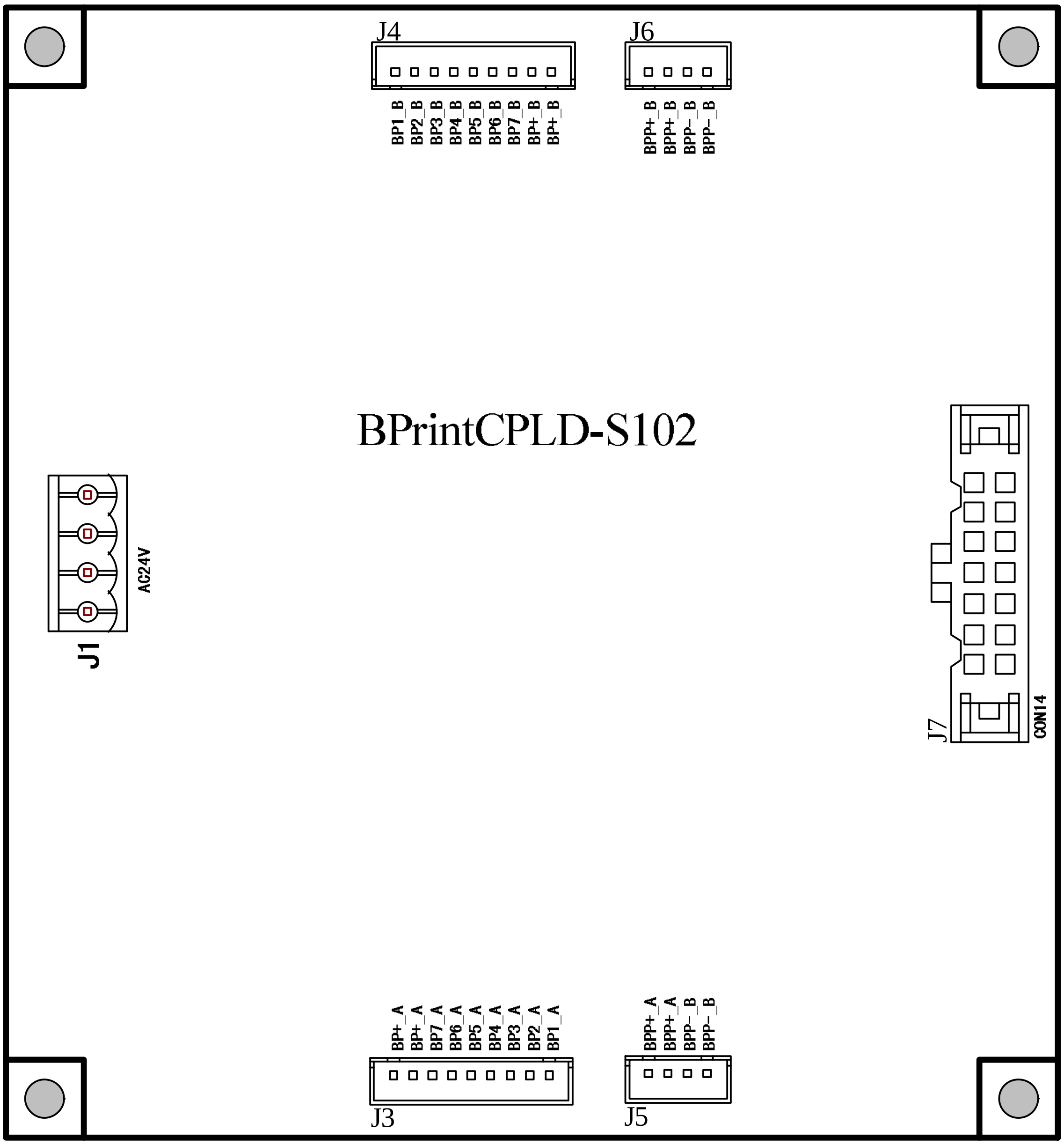
Socket code	SN	Wire definition	Description
J23	1	GND	#1 Cassette Sensor GND
	2	#1MagSensor1	#1 Cassette Sensor Signal 1
	3	#1MagSensor2	#1 Cassette Sensor Signal 2
	4	+5V	#1 Cassette Sensor Power Supply
J24	1	GND	Cutter Sensor GND
	2	CutSensor1	Cutter Sensor Signal 1
	3	CutSensor2	Cutter Sensor Signal 2
	4	+5V	Cutter Sensor Power Supply
J25	1	GND	STANDBY
	2	MaskSensor1	
	3	MaskSensor2	
	4	+5V	
J26	1	GND	#1 Door Switch GND
	2	DoorLock1	#1 Door Switch Signal
	3	GND	#2 Door Switch GND
	4	DoorLock2	#2 Door Switch Signal
J27	1	GND	STANDBY
	2	DividSensor1	
	3	DividSensor2	
	4	+5V	
J28	1	AC28V1	STANDBY
	2	AC28V2	
	3	CUTA	
	4	CUTB	
J29	1	+5V	Power Supply
	2	GND	GND
	3	FDLCLK	Paper Advance Clock Signal
	4	FDDIR	Paper Advance Clock Signal

Socket code	SN	Wire definition	Description
	5	FDLOCK	Paper Advance Lock Signal
J30	1	+5V	Power Supply
	2	GND	GND
	3	PFCLK	Platform Motor Clock Signal
	4	GND	Platform Motor Direction Signal
	5	PFLOCK	Platform Motor Lock Signal
J31	1	+5V	Power Supply
	2	GND	GND
	3	M1CLK	#1 Motor Clock Signal
	4	M1DIR	#1 Motor Direction Signal
	5	M1LOCK	#1 Motor Lock Signal
J32	1	+5V	Power Supply
	2	GND	GND
	3	M2CLK	#2 Motor Clock Signal
	4	M2DIR	#2 Motor Direction Signal
	5	M2LOCK	#2 Motor Lock Signal
J33	1	+5V	Power Supply
	2	GND	GND
	3	M3CLK	#3 Motor Clock Signal
	4	M3DIR	#3 Motor Direction Signal
	5	M3LOCK	#3 Motor Lock Signal
J34	1	+5V	Power Supply
	2	+5V	Power Supply
	3	DPRINT1	Backprinter Output Signal 1
	4	DPRINT2	Backprinter Output Signal 2
	5	DPRINT3	Backprinter Output Signal 3
	6	DPRINT4	Backprinter Output Signal 4
	7	DPRINT5	Backprinter Output Signal 5

Socket code	SN	Wire definition	Description
	8	DPRINT6	Backprinter Output Signal 6
	9	DPRINT7	Backprinter Output Signal 7
	10	DPRINT8	Backprinter Output Signal 8
	11	BPSEL1	Backprinter Control Choice A
	12	BPSEL2	Backprinter Control Choice B
	13	GND	GND
	14	GND	
J35	1	+5V	STANDBY
	2	GND	
	3	M4CLK	
	4	M4DIR	
	5	M4LOCK	
J36	1	+5V	Power Supply
	2	GND	GND
	3	CUTCLK	Cutter Motor Clock Signal
	4	CUTDIR	Cutter Motor Direction Signal
	5	CUTLOCK	Cutter Motor Lock Signal
J37	1	+5V	Power Supply
	2	GND	GND
	3	ENTRYCLK	Raiser Motor1 Clock Signal
	4	GND	GND
	5	ENTRYLOCK	Raiser Motor1 Lock Signal
J38	1	+5V	STANDBY
	2	GND	
	3	EXITCLK	
	4	GND	
	5	EXITLOCK	
J39	1	+5V	STANDBY

Socket code	SN	Wire definition	Description
	2	GND	STANDBY
	3	DIVIDCLK	
	4	DIVIDDIR	
	5	DIVIDLOCK	

4.4 BPrintCPLD-S102



Disposition and description

Socket code	SN	Wire definition	Description
J1	1	A	Standby
	2	B	
	3	C	
	4	D	
J2	1	A	Synchronous belt motor phase A
	2	B	Synchronous belt motor phase B
	3	C	Synchronous belt motor phase C
	4	D	Synchronous belt motor phase D
J3	1	A	#3 cassette motor phase A
	2	B	#3 cassette motor phase B
	3	C	#3 cassette motor phase C
	4	D	#3 cassette motor phase D
J4	1	A	# 1 cassette motor phase A
	2	B	# 1 cassette motor phase B
	3	C	# 1 cassette motor phase C
	4	D	# 1 cassette motor phase D
J5	1	A	Paper-advancing motor phase A
	2	B	Paper-advancing motor phase B
	3	C	Paper-advancing motor phase C
	4	D	Paper-advancing motor phase D
J6	1	A	#2 cassette motor phase A
	2	B	#2 cassette motor phase B
	3	C	#2 cassette motor phase C
	4	D	#2 cassette motor phase D
J7	1	AC15V1	Power supply
	2		

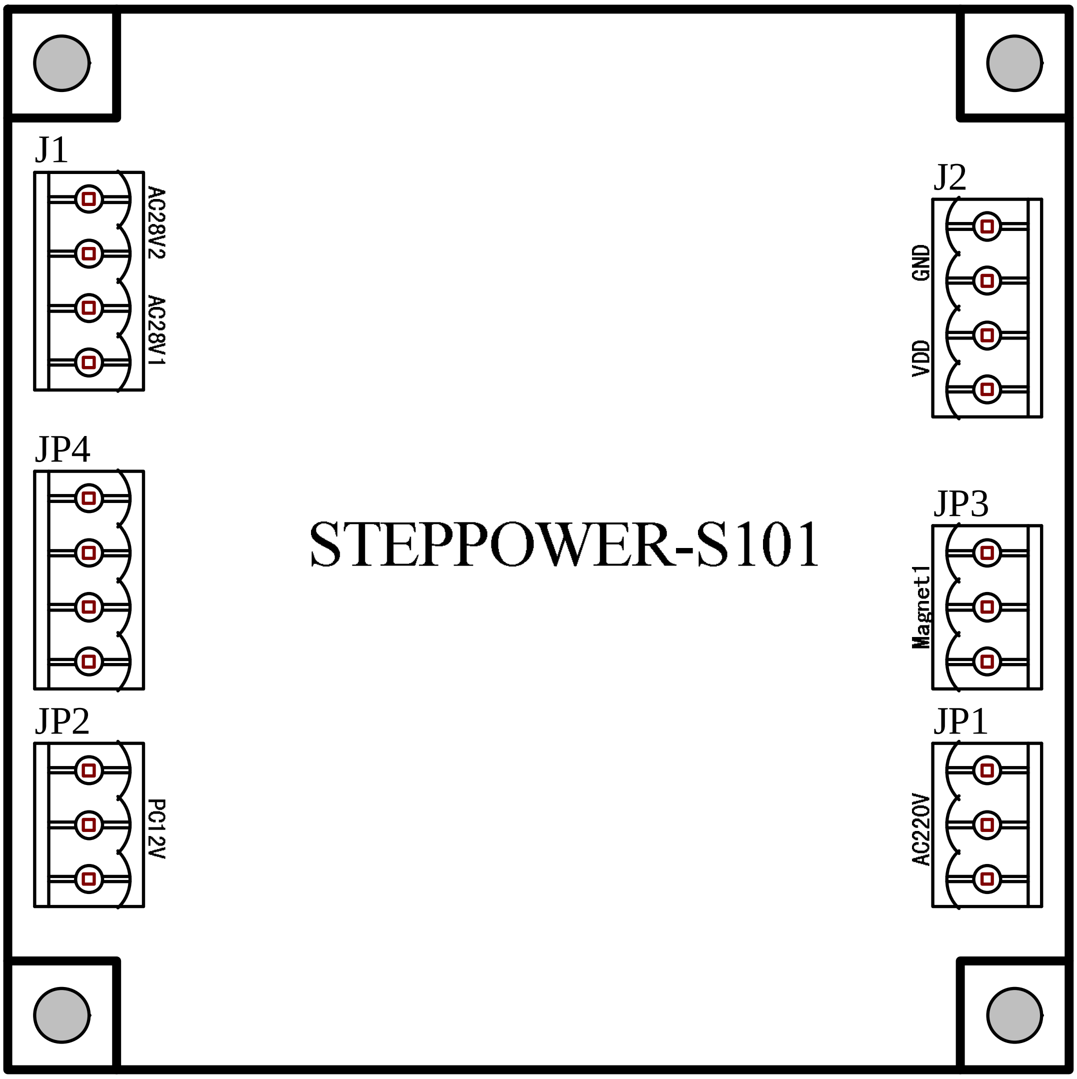
Socket code	SN	Wire definition	Description
	3	AC15V2	
J8	1	A	Standby
	2	B	
	3	C	
	4	D	
J9	1	BP1	Back printer pin1 Drive
	2	BP2	Back printer pin2 Drive
	3	BP3	Back printer pin3 Drive
	4	BP4	Back printer pin4 Drive
	5	BP5	Back printer pin5 Drive
	6	BP6	Back printer pin6 Drive
	7	BP7	Back printer pin7 Drive
	8	BP+	Back printer pin Drive voltage
	9	BP+	
J10	1	BPP+	Back printer +
	2	BPP+	
	3	BPP-	Back printer -
	4	BPP-	
J11	1	+3.3V	Power supply + 3.3 V
	2	DGND	DGND
	3	+5V	Power supply + 5V
	4	GND	Analog GND
	5	GND	Analog GND
	6	GND	Analog GND
	7	VDD	Power supply of motor
	8	VDD	Power supply of motor
J12	1	CUTB	Cutter motor phase B
	2	CUTA	Cutter motor phase A

Socket code	SN	Wire definition	Description
	3	AC24V2	Power supply
	4	AC24V1	
J14	1	CUT	Cutter control signal
	2	BP1	Back printer pin1 control signal
	3	BP2	Back printer pin2 control signal
	4	BP3	Back printer pin3 control signal
	5	BP4	Back printer pin4 control signal
	6	BP5	Back printer pin5 control signal
	7	BP6	Back printer pin6 control signal
	8	BP7	Back printer pin7 control signal
	9	BP8	Back printer pin9 drive control signal
	10	BP9	Back printer pin1 control signal
	11	BP10	Back printer pin2 control signal
	12	BP11	Back printer pin3 control signal
	13	BP12	Back printer pin4 control signal
	14	BP13	Back printer pin5 control signal
	15	BP14	Back printer pin6 control signal
	16	BP15	Back printer pin7 control signal
	17	BP16	Back printer pin9 drive control signal
	18	M8_ENB	standby
	19	M8_CK	
	20	M8_DIR	
	21	M6_LOCK	#2 cassette motor brake control signal
	22	M6_CLK	#2 cassette motor pulse control signal
	23	M6_DIR	#2 cassette motor direction control signal
	24	M5_LOCK	Paper-advancing motor brake control signal
	25	M5_CLK	Paper-advancing motor pulse control

Socket code	SN	Wire definition	Description
			signal
	26	M5_DIR	Paper-advancing motor direction control signal
	27	M4_LOCK	#1 cassette motor brake control signal
	28	M4_CLK	#1 cassette motor pulse control signal
	29	M4_DIR	#1 cassette motor direction control signal
	30	M3_LOCK	#3 cassette motor brake control signal
	31	M3_CLK	#3 cassette motor pulse control signal
	32	M3_DIR	#3 cassette motor direction control signal
	33	M2_LOCK	Synchronous motor brake control signal
	34	M2_CLK	Synchronous motor pulse control signal
	35	M2_DIR	Synchronous motor direction control signal
	36	M1_LOCK	
	37	M1_CLK	standby
	38	M1_DIR	
	39	DGND	DGND
	40	DGND	DGND
	1	BP8	Back printer pin1 drive
	2	BP9	Back printer pin2 drive
	3	BP10	Back printer pin3 drive
	4	BP11	Back printer pin4 drive
J17	5	BP12	Back printer pin5 drive
	6	BP13	Back printer pin6 drive
	7	BP14	Back printer pin7 drive
	8	BP+	Back printer pin drive voltage
	9	BP+	
J18	1	BPP+	Back printer motor +

Socket code	SN	Wire definition	Description
	2	BPP+	
	3	BPP1-	Back printer motor -
	4	BPP1-	

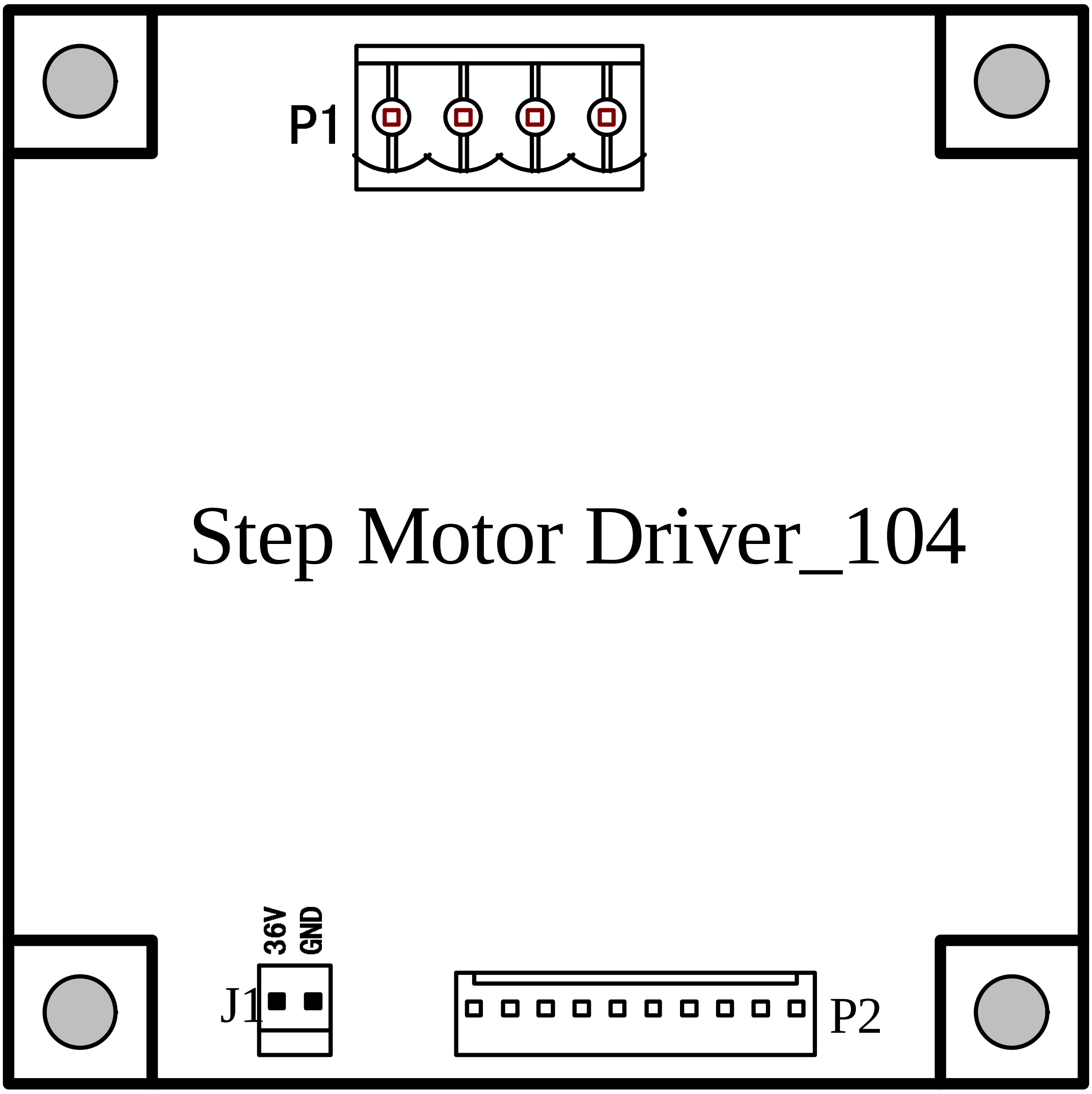
4.5 STEPPOWER-S101



Disposition and description

Socket code	SN	Wire definition	Description
J1	1	AC32V1	Power Supply
	2		
	3	AC32V2	Power Supply
	4		
J2	1	GND	GND
	2		GND
	3	VDD	Power Supply
	4		Power Supply
JP1	1	AC220V1	220V INPUT
	2		
	3	AC220V2	220V OUTPUT
JP2	1	GND	PC GND
	2		
	3	PC+12V	PC Power Supply
JP3	1	+24V	STANDBY
	2	Magnet1	
	3	GND	
JP4	1	GND	STANDBY
	2	+12V	
	3		
	4		

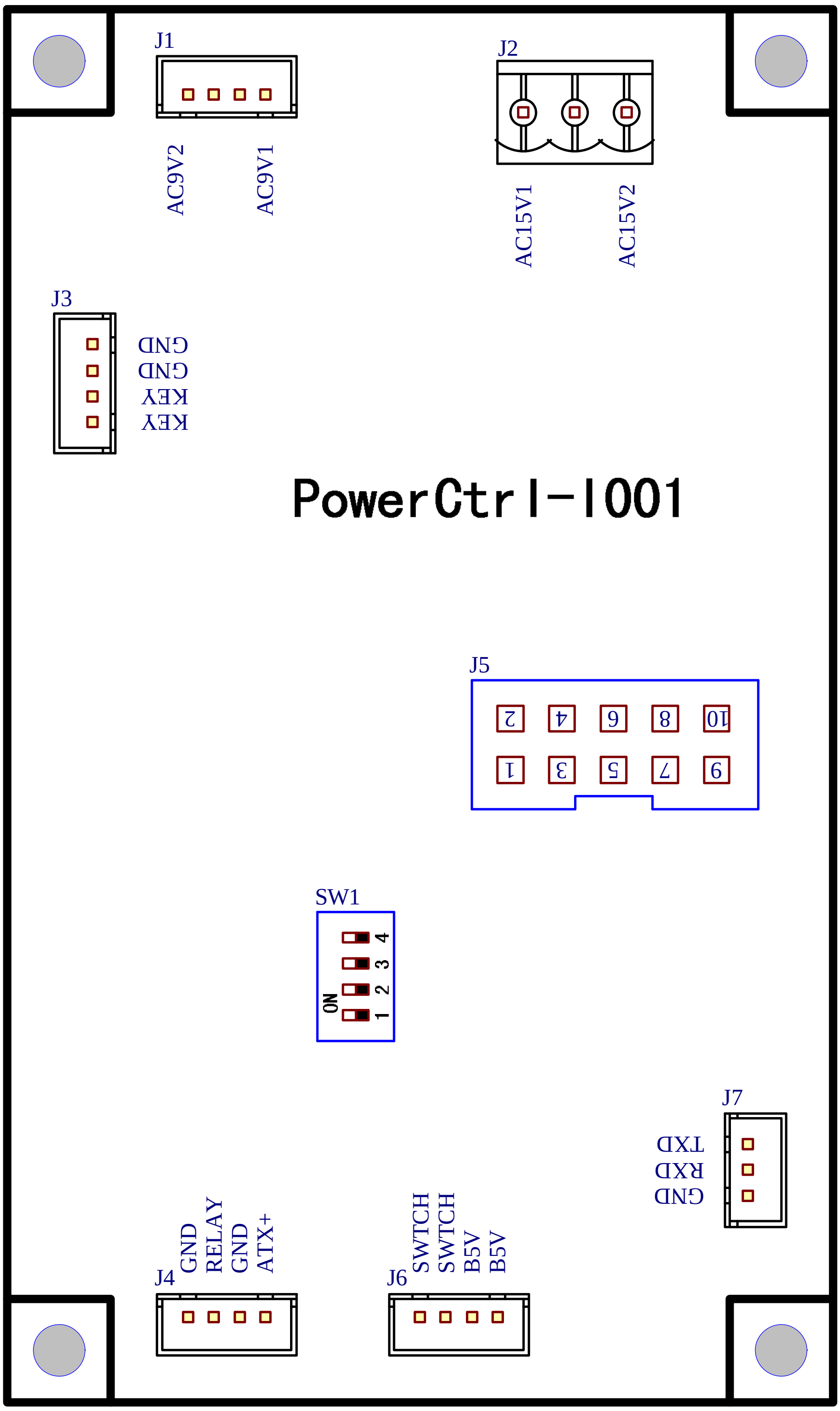
4.6 Step Motor Driver_104



Disposition and description

Socket code	SN	Wire definition	Description
P1	1	A	Motor Phase A
	2	B	Motor Phase B
	3	C	Motor Phase C
	4	D	Motor Phase D
J1	1	GND	GND
	2	VDD	Power Supply 36V
P2	1	VDD	Standby
	2	VDD	
	3	GND	Standby
	4	GND	
	5	VCC	Power Supply 3.3V
	6	GND	GND
	7	CLK	Clock Signal
	8	DIR	Direction Signal
	9	P.D	Lock Signal
	10	H/F	Standby

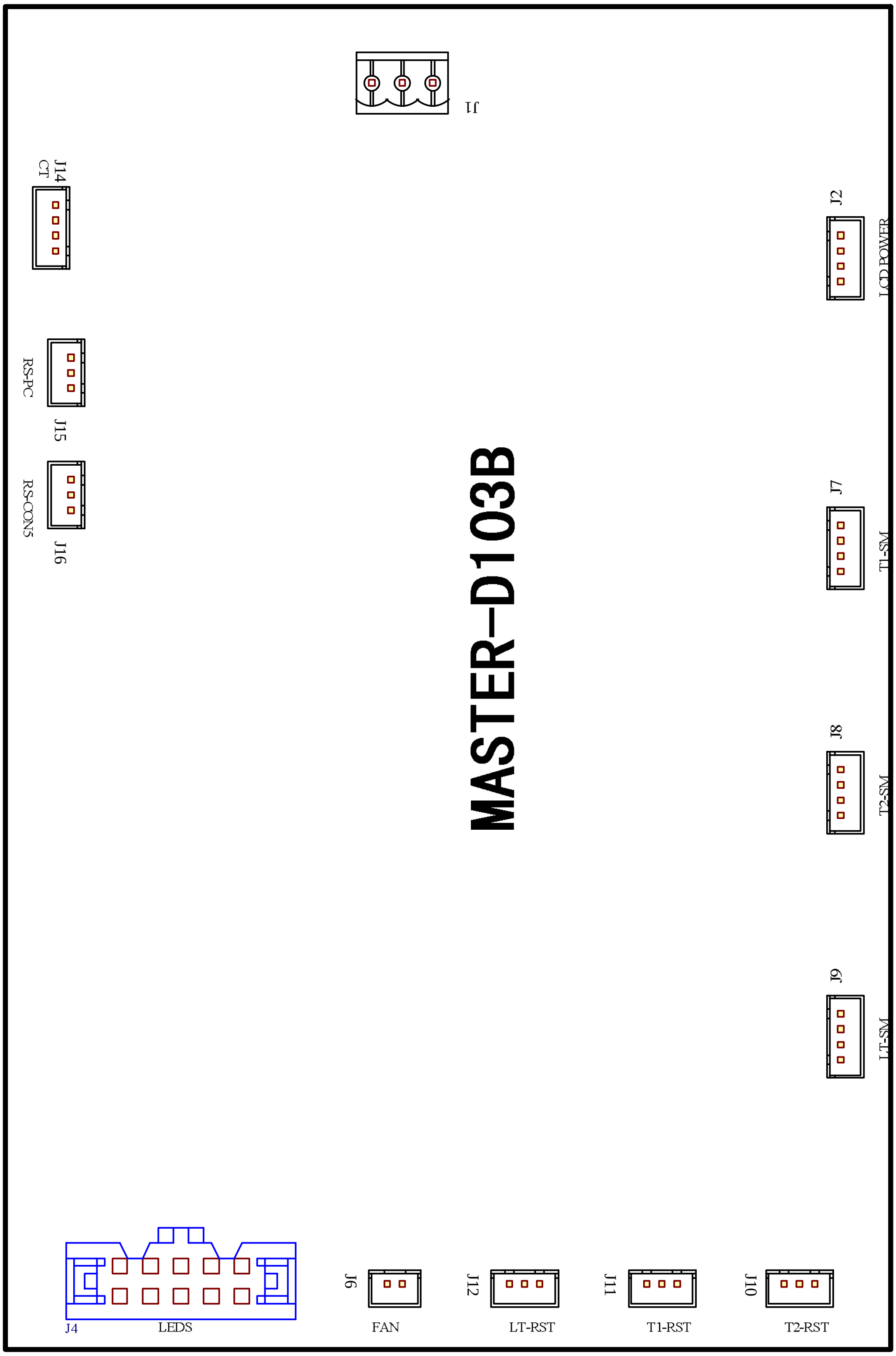
4.7 PowerCtrl-I001



Disposition and description

Socket code	SN	Wire definition	Description
J1	1	AC9V2	Power supply
	2	AC9V2	
	3	AC9V1	
	4	AC9V1	
J2	1	AC15V1	Power supply
	2		
	3	AC15V2	
J3	1	KEY	Boot-strap switch
	2	KEY	
	3	GND	
	4	GND	
J4	1	ATX+	Standby
	2	GND	
	3	RELAY+	AC contactor control signal +
	4	GND	AC contactor control signal GND
J6	1	B5V	Standby
	2	B5V	
	3	SWTCH	
	4	SWTCH	
J7	1	TXD	Serial communication cable
	2	RXD	
	3	GND	

4.8 MASTER-D103B PCB



Disposition and description

Socket code	SN	Wire definition	Description
J1	1	AC24V1	Power supply
	2		
	3	AC24V2	
J2	1	GND	Standby
	2	5V	
	3	GND	
	4	20V	
J4	1	RED	Red light control signal
	2	LEDS VCC	Power supply of LEDS
	3	GND	GND
	4	TERM	Temperature control signal
	5	GREEN	Green light control signal
	6	BLUE	Blue light control signal
	7		Standby
	8	VCC	Power supply
	9	GND	GND
	10	LS IMP1	Photo cell control signal
J6	1	OUT FAN	Fan control signal
	2	VCC	Power supply of fan
J7	1	T1 A	X-direction step motor drive
	2	T1 B	
	3	T1 NA	
	4	T1 NB	
J8	1	T2 A	Y-direction step motor drive
	2	T2 B	
	3	T2 NA	

Socket code	SN	Wire definition	Description
	4	T2 NB	
J9	1	LT A	Lens turn-plate motor drive
	2	LT B	
	3	LT NA	
	4	LT NB	
J10	1	GND	y-direction step motor sensor
	2	T2 RST	
	3	5V	
J11	1	GND	y-direction step motor sensor
	2	T1 RST	
	3	5V	
J12	1	GND	Turn-plate sensor
	2	LT RST	
	3	5V	
J13	1	GND	standby
	2	NC RST	
	3	5V	
J14	1		standby
	2		
	3		
	4		
J15	1		Serial communication
	2		
	3		
J16	1		Serial communication
	2		
	3		

4.9 LCD driver board Epson 14U



Disposition and description

Connector Name	function
DVI Port	Signal input; connect to DVI port of Linux server video card.
50 pins socket	Signal output; connect to LCD.
4 pins socket	Switching Power supply input
10 pins socket	Programmed port

Functions

- Translate signal from Linux PC video card to LCD.

Adjustment for replacement

- Redo Morning setup for all paper magazines.

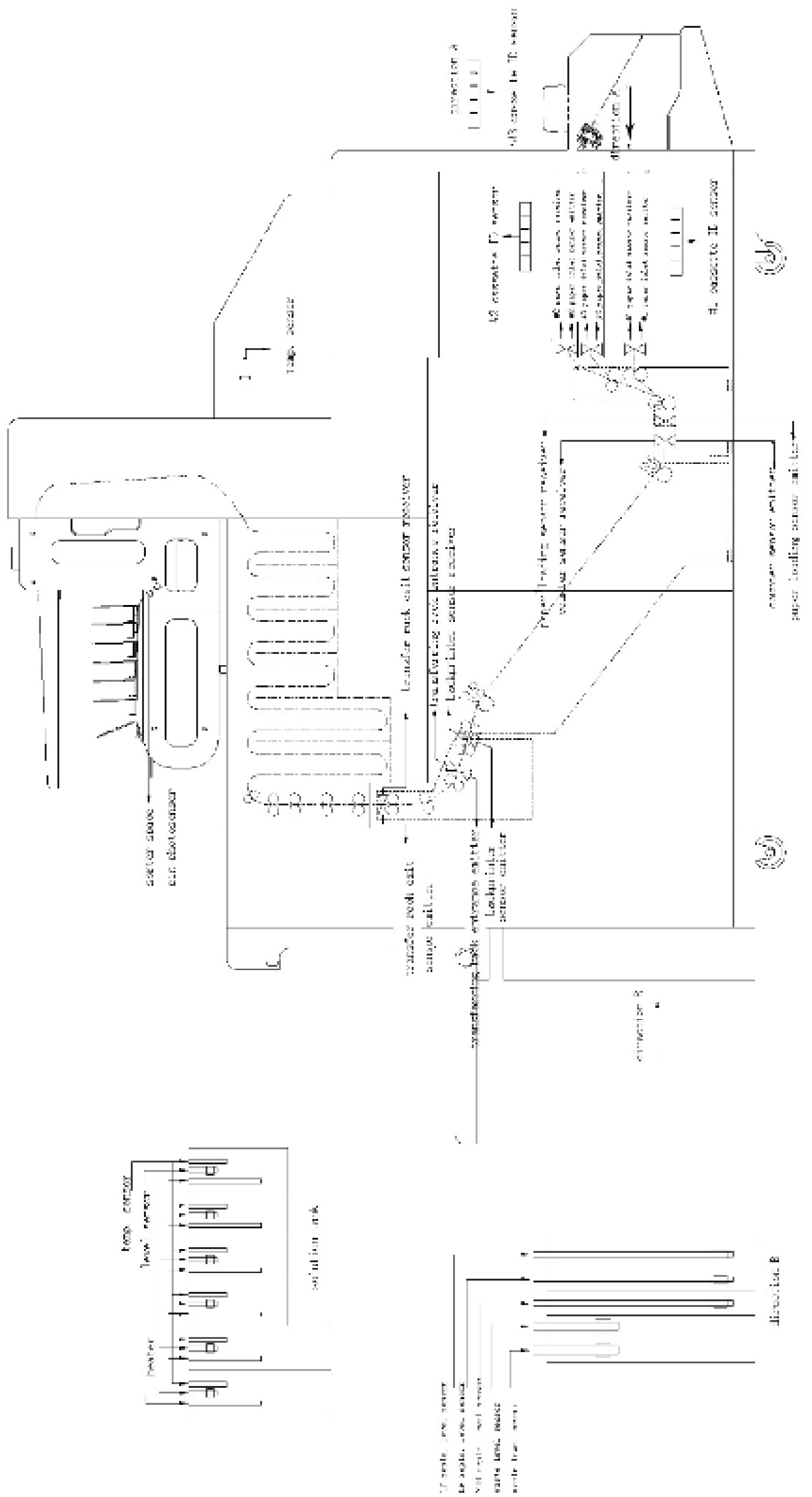
2.1 Morning setup

- Redo uniformity calibration.

☞ 2.7 Uniformity calibration

Don’t touch the trimmers on board anytime unless you are requested and follow an instruction. Otherwise it could cause serious photo problems.

4.10 Sensors



Illustration

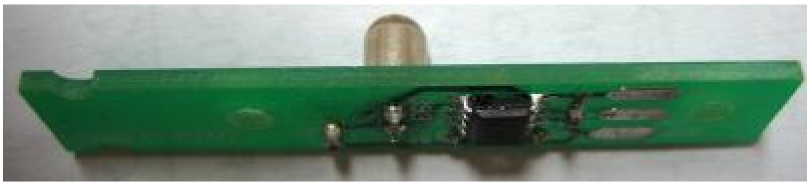


Fig 4.1.1Receiver of photographic sensor



Fig 4.1.2 Transmitter of photographic sensor



Fig 4.1.. Paper magazine ID sensor



Fig 4.1.4 Level sensor

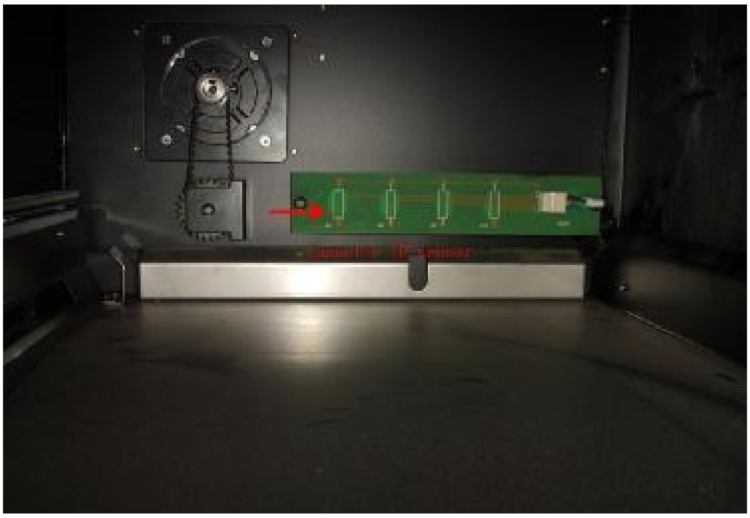


Fig 4.2

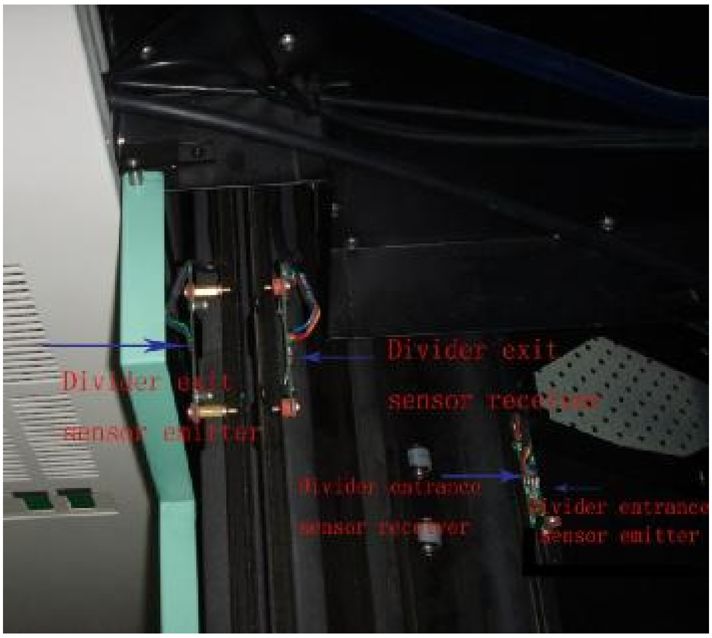

Divider exit
sensor emitter
Divider exit
sensor receiver
Divider entrance
sensor receiver
Divider entrance
sensor emitter

Fig4.3



Fig 4.4

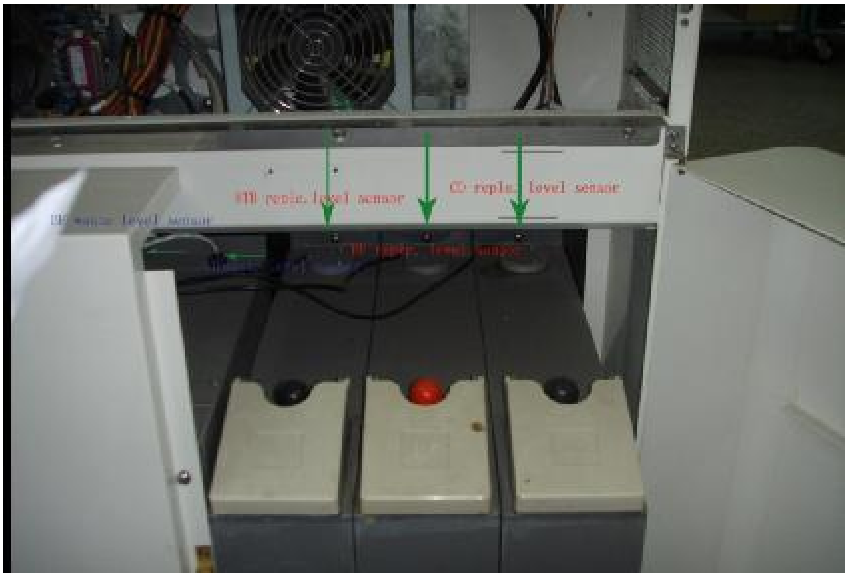


Fig 4.5



Fig 4.6



Fig 4.7



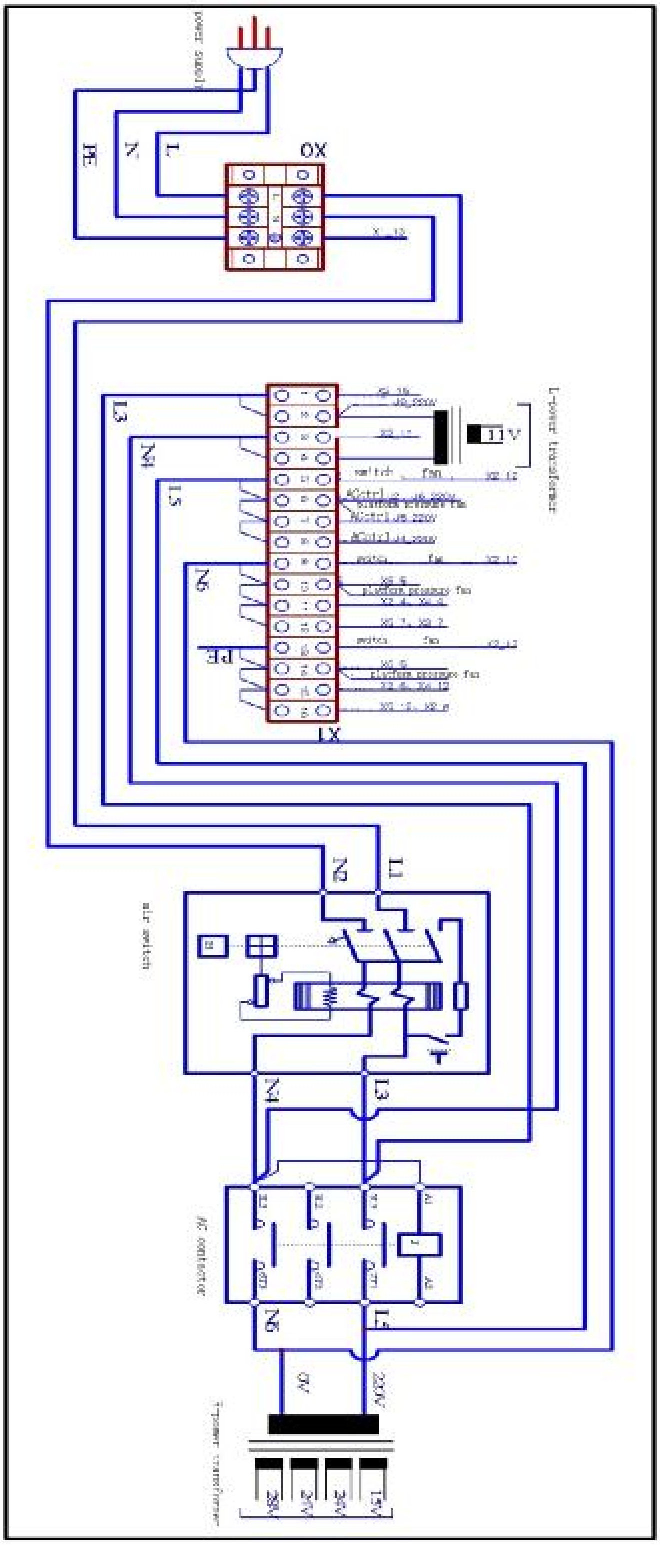
Fig 4.8

You can test the function of the sensors in **Labutil** software.

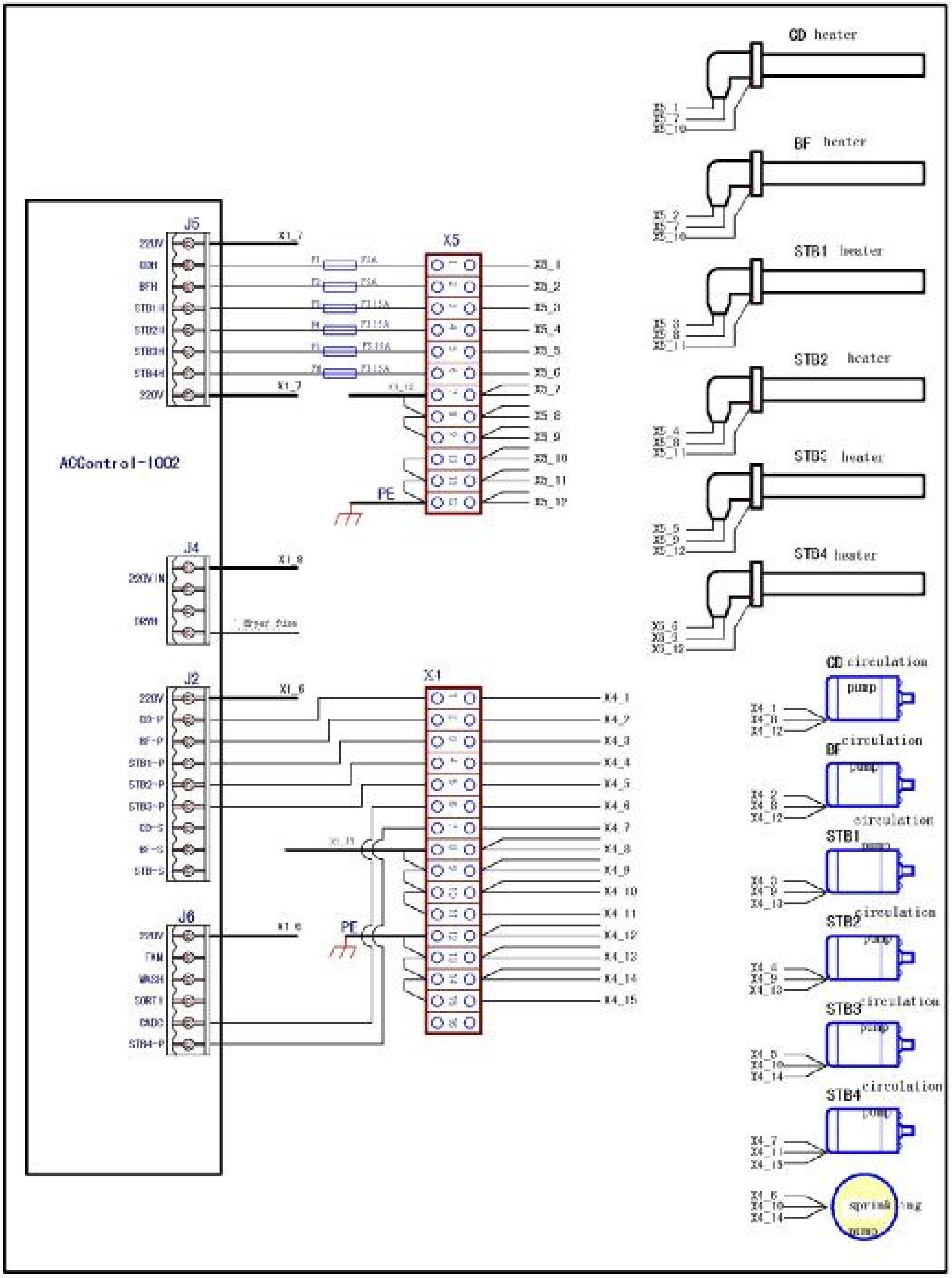
Description

Photo sensor name	Use
Paper magazine ID photo sensor	For detecting paper magazine ID
Paper Inlet photo sensor	For detecting whether there is paper
Paper loading photo sensor	For detecting if the paper is properly loaded
Cutter right photo sensor	For detecting cutter home position
Cutter left photo sensor	For detecting cutter home position
Exposure platform counter photo sensor	For detecting the length of the paper cut
Backprinter photo sensor	For detecting whether the back printer is on or off.
divider entrance photo sensor	For detecting whether there is paper at the entrance of divider
divider exit photo sensor	For detecting whether the paper comes into the chemical or not
Temperature sensor	For detecting the temperature of CD, BF, STB and dryer rack respectively.
Replenishing level sensor	For detecting the level of CD,BF,STB replenishing level respectively
Waste level sensor	For measuring the level of CD waste and BF waste respectively
Sorter1 space pin sensor	For detecting the position where sorter1 stops

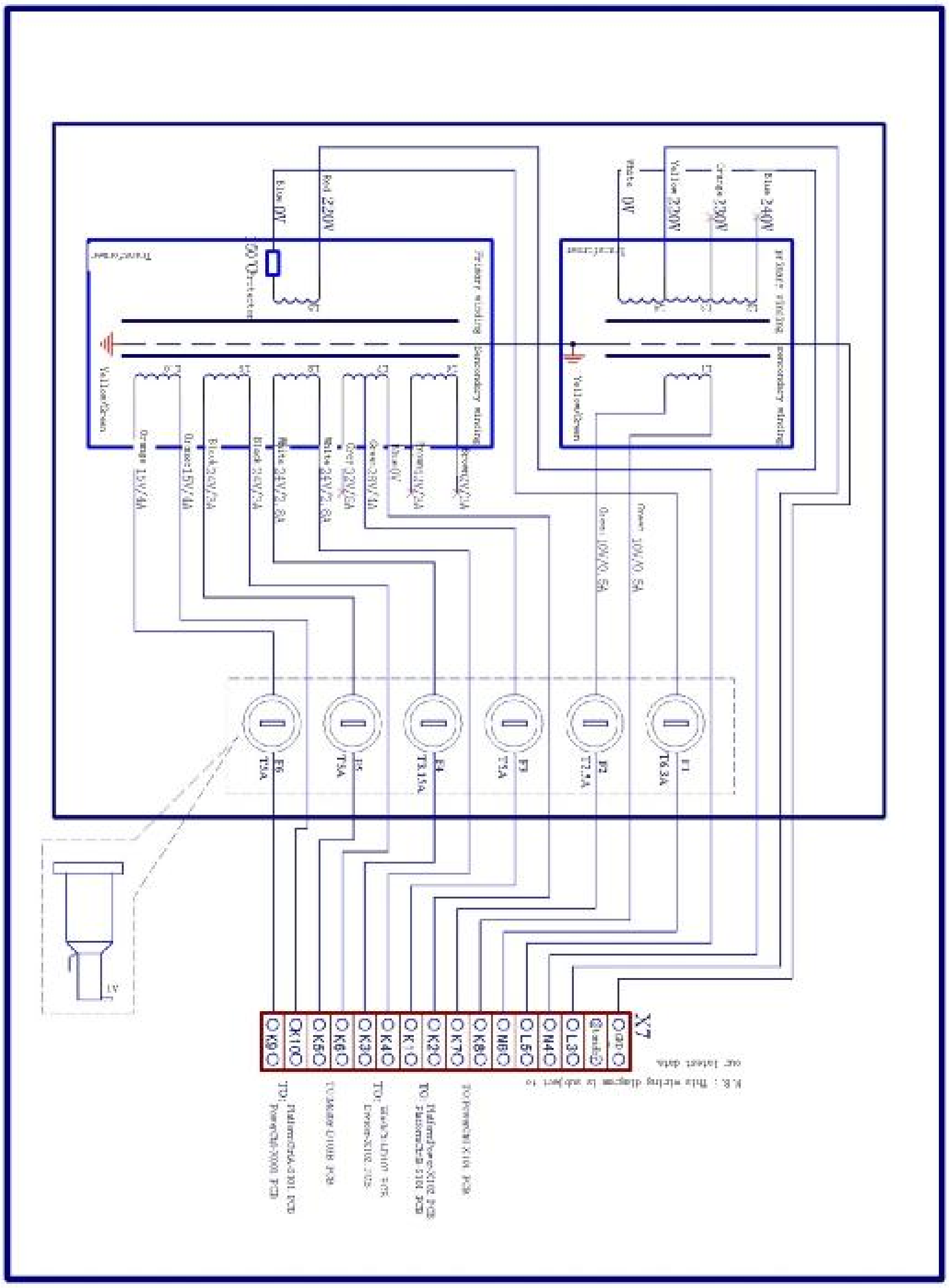
4.11 Main source of power supply wiring diagram



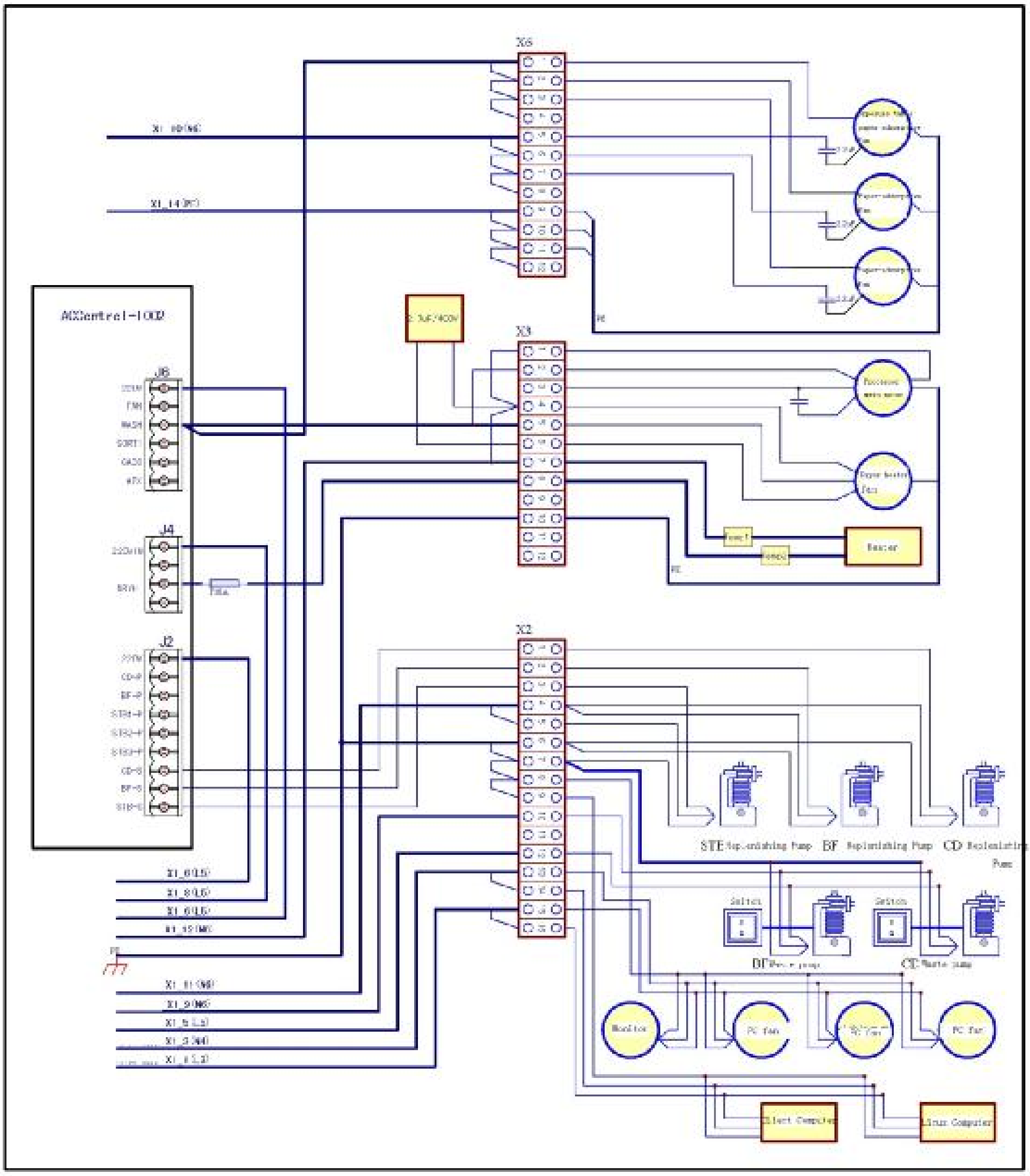
4.12 AC power supply wiring diagram



4.13 Transformer wiring diagram

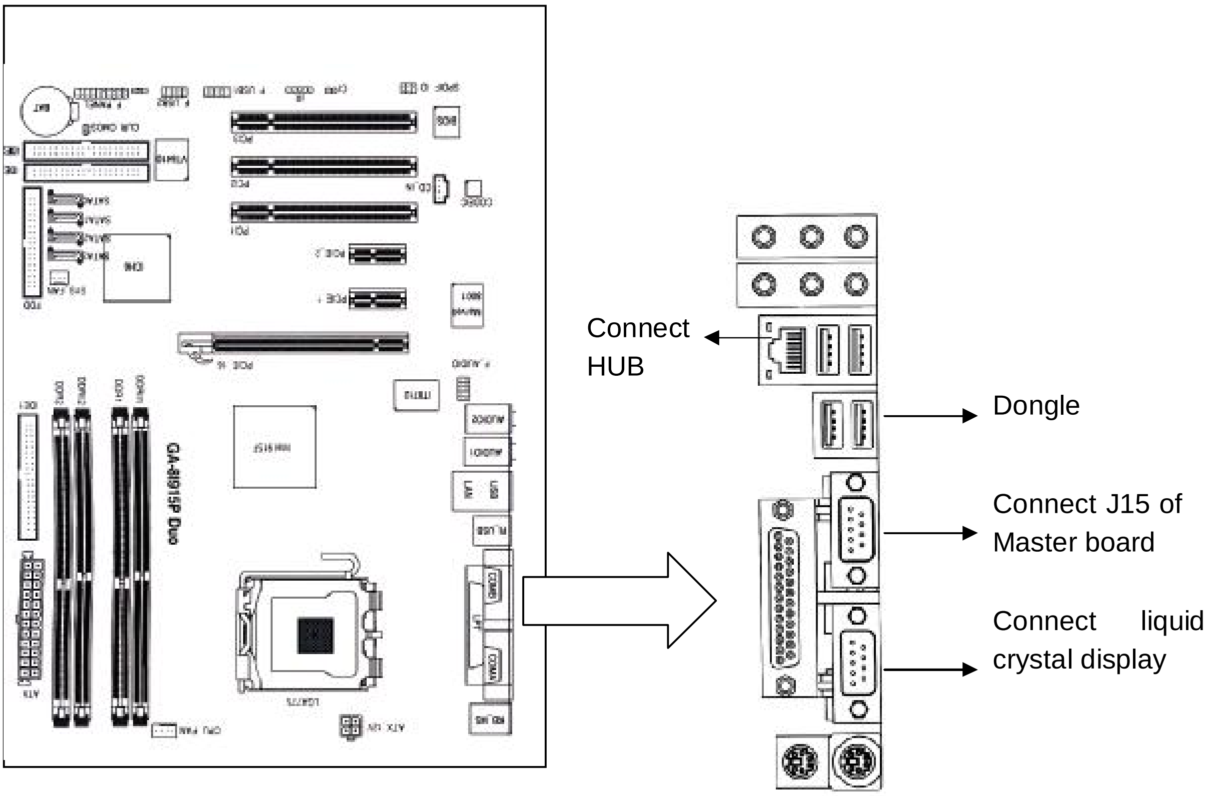


4.14 Dryer wiring diagram

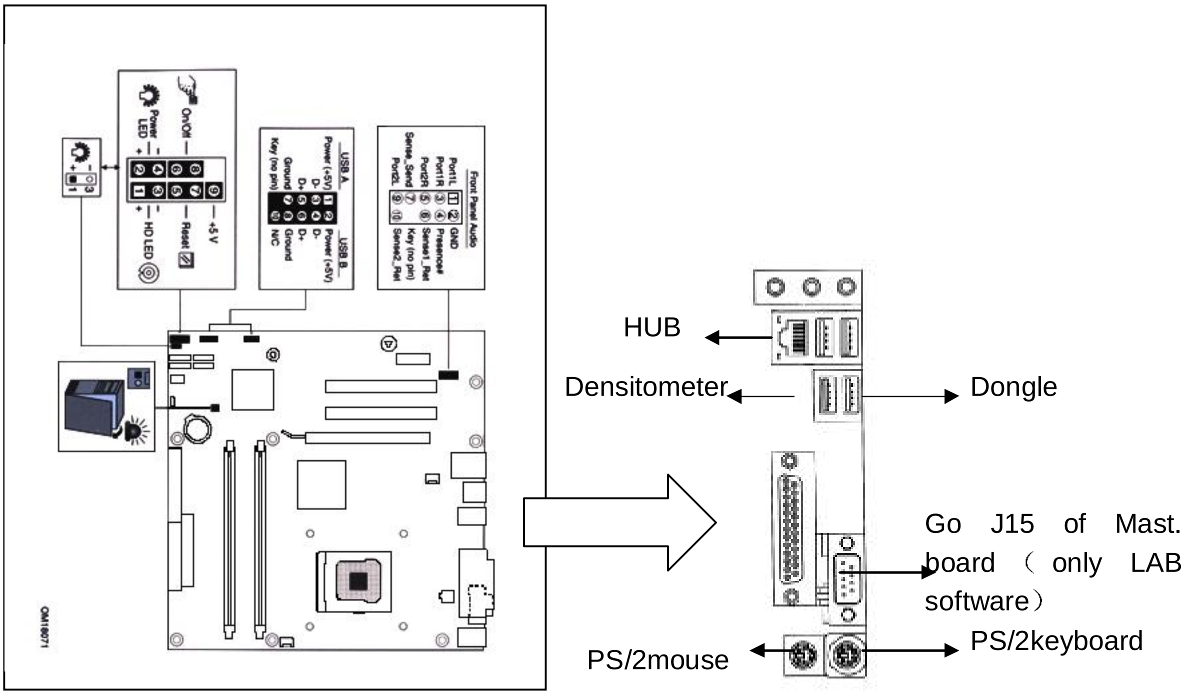


4.15 Network sketch map

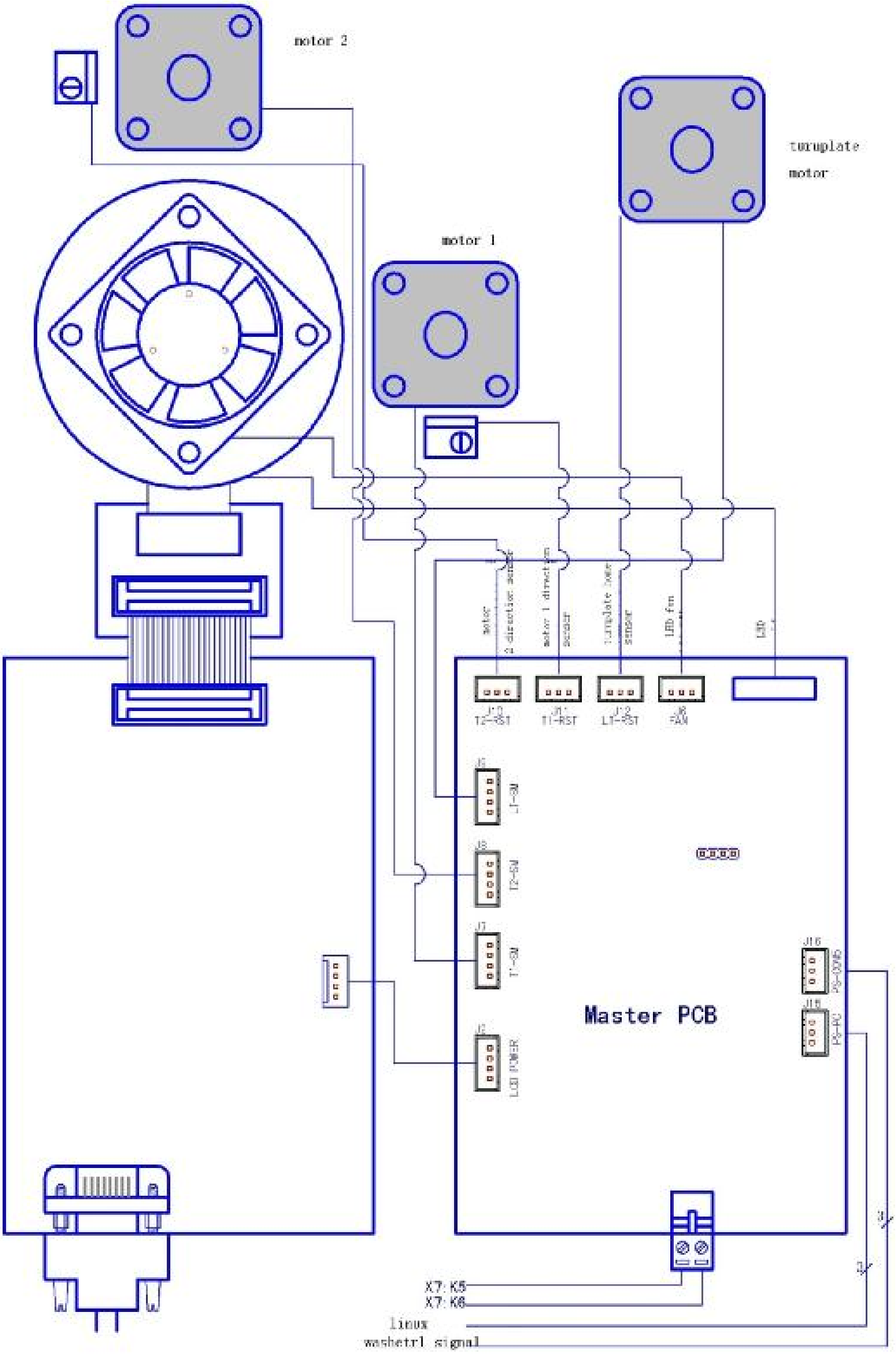
Master computer-Linux system



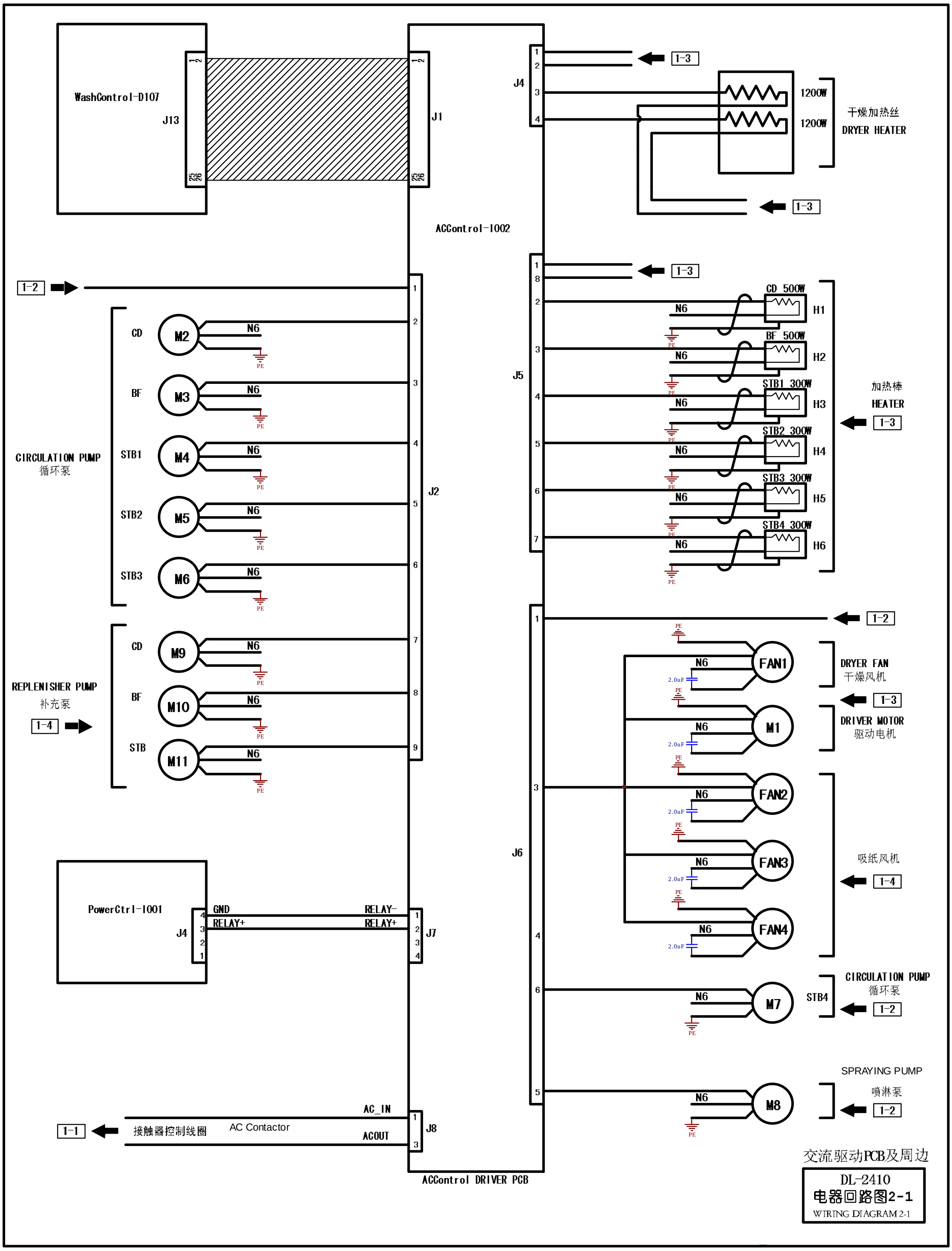
Client computer Windows system



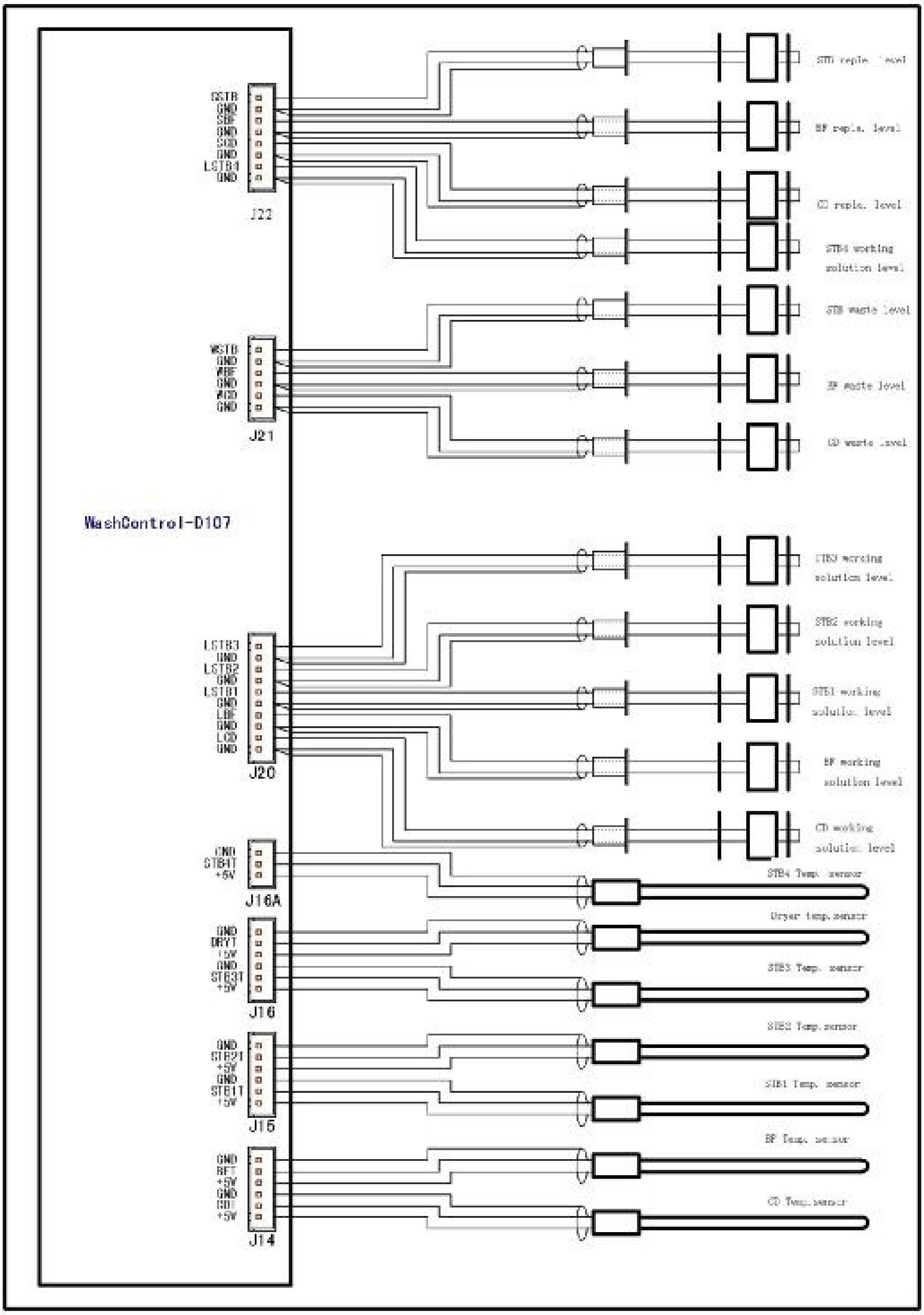
4.16 Exposure part



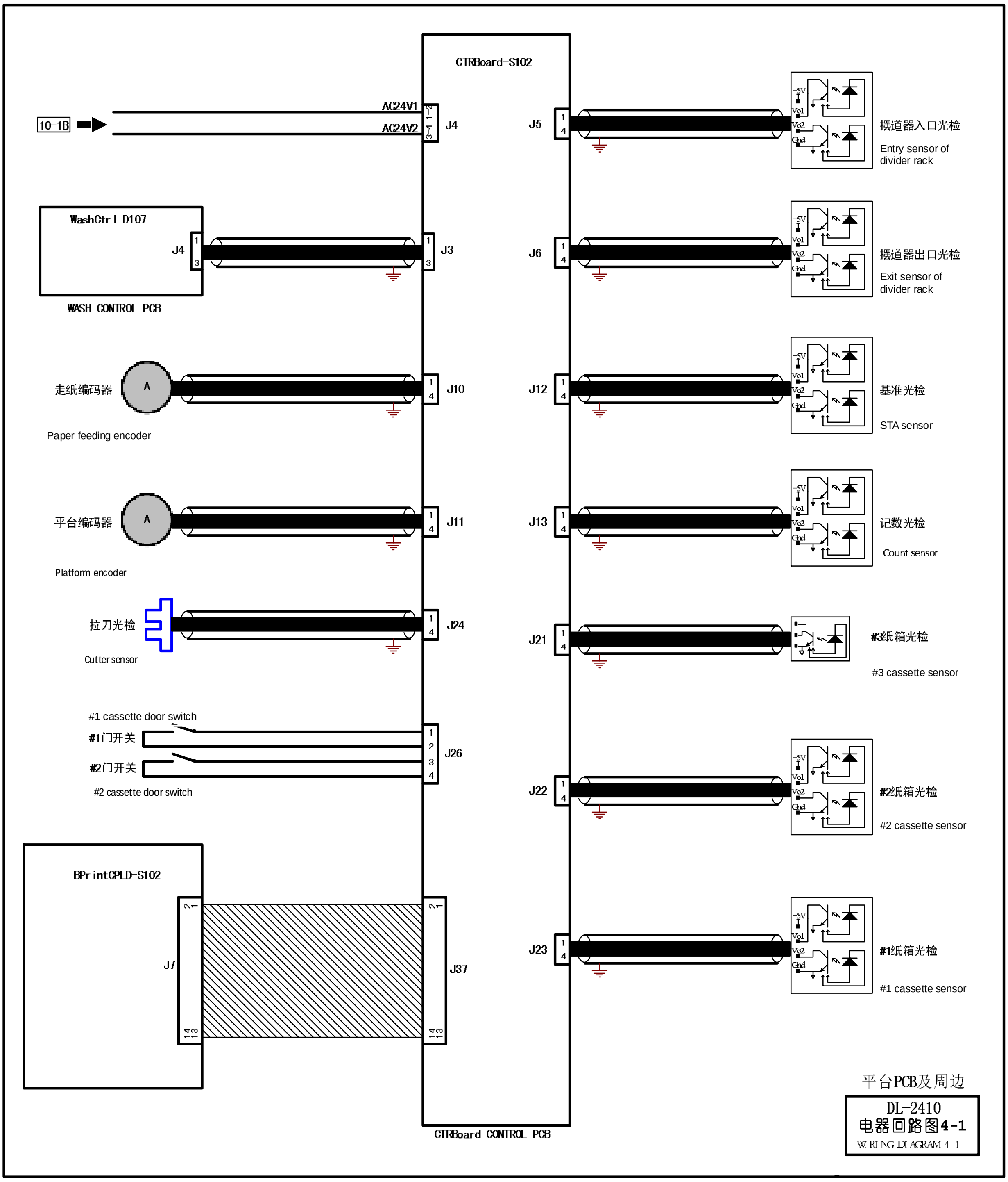
4.17 ACContrl-I002 wiring diagram



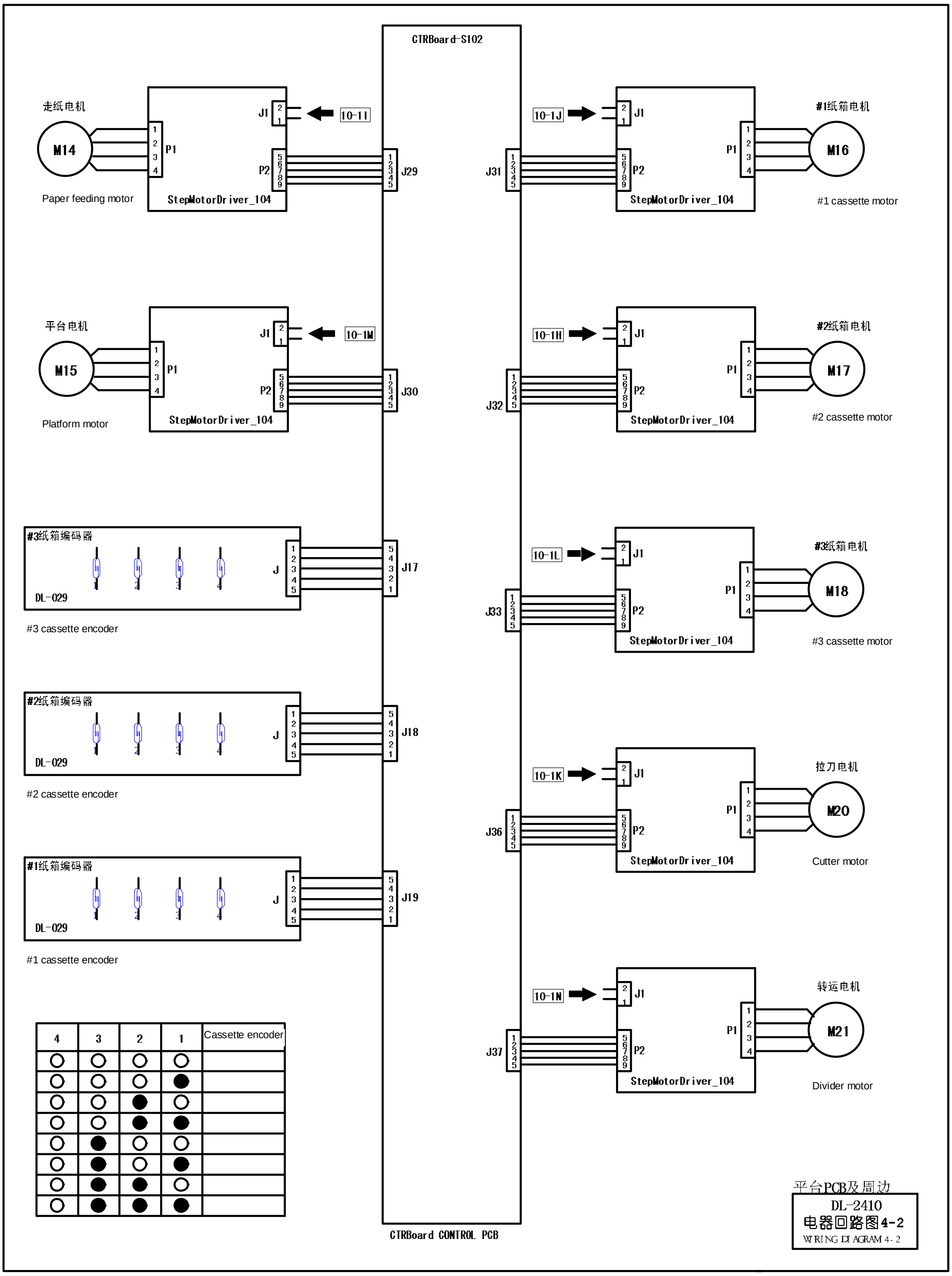
4.18 Washctrl-D107 wiring diagram



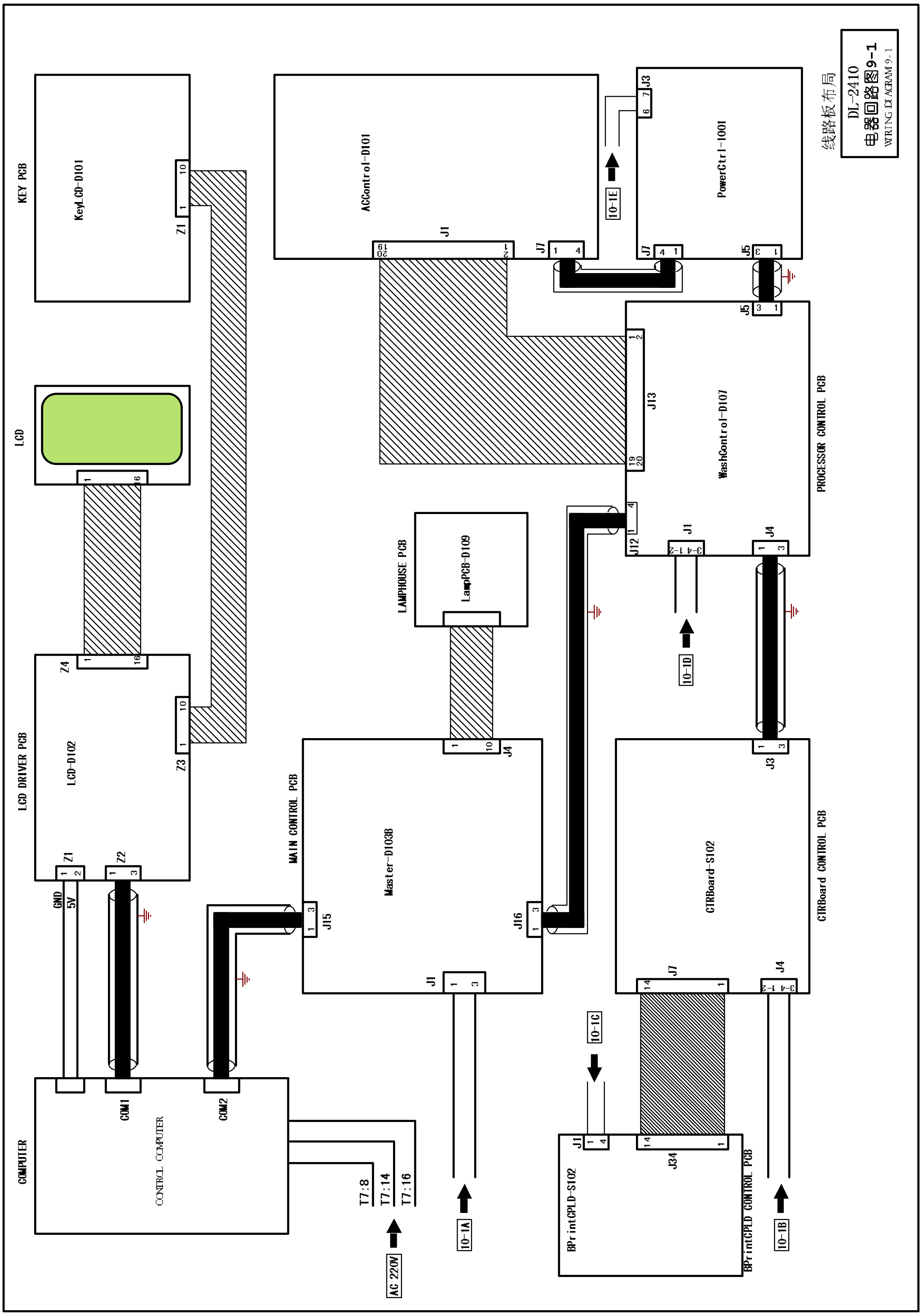
4.19 CtrlBoard-S102 wiring diagram-1



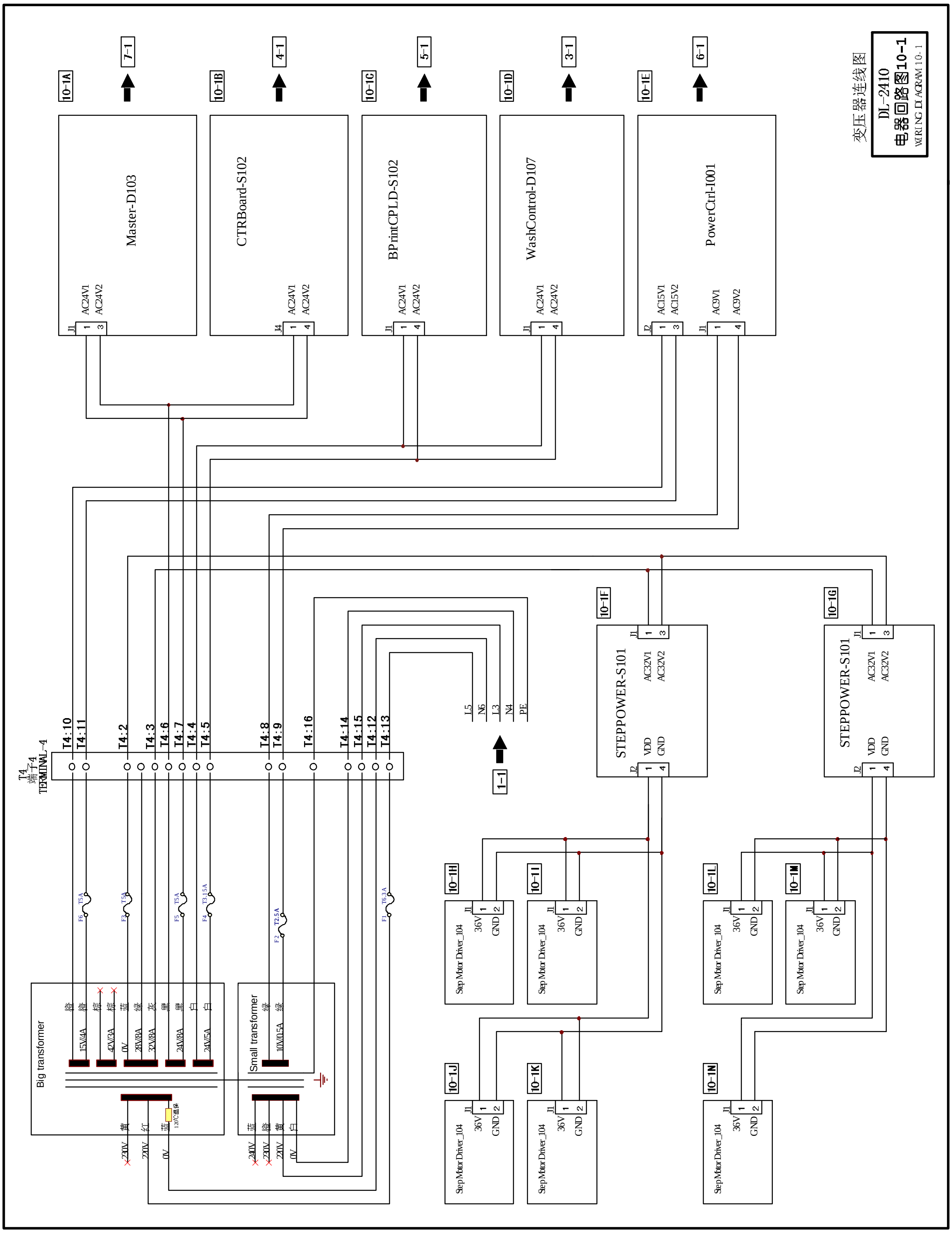
4.20 CtrlBoard-S102 wiring diagram-2



4.21 PCB board wiring diagram



4.22 Transformer wiring diagram



5

Chapter 5 Trouble shooting

This chapter describes how to solve the troubles.

Prologue

Please check the error index for the error ID first, and then read the information of the corresponding error ID for solving the problems.

The information of each error ID contains the possible reasons of the problem and the corrective actions.

For more information, ask the distributor from whom you purchased the machine or report to DOLI.

In most cases, problems are corrected through e-mail by our fully trained technical staff.

DOLI Technical Support can be reached at GMT 00:00-08:00, Monday through Friday.
E-mail address: service@doli.com.cn
Hotline: 0086 21 57648008
MSN: service_doli@hotmail.com
Skype: service_doli

We will need the following items for diagnosis:

- Your machine number
- A Brief description of the problems
- Sample scan photos

We are committed to provide comprehensive after-sales support to assure the ongoing success of our customers.

5.1 Error index

Linux LCD Panel error messages

#	Description
003	Paper loading error
008	Cassette not setup
009	Blocked
030	Separator blocked
031	No connection with master
032	Tape failure
033	Display failure
034	Photo preparation failure

Photo problems

#	Description
700	Photo comes out not dry
701	Paper scratch
705	Photo comes out dirty
706	Image out of focus
707	Colour noise on the photo
708	Strong grid lines on the photo
709	Vertical lines on the photo
710	Colour or density Uniformity of the photo is no good
711	Photos Chaos on sorter
712	White borders on the photo
713	Colour is very different with the monitor preview
717	Paper length is shorter or longer than the setting length of the corresponding format
718	Image magnification or scale does not match the monitor preview
719	Photo overlapping

Mechanical problems

#	Description
300	Paper has jammed in the cutter section
301	Paper can not be cut off
310	Replenishing pump doesn’t work
311	Low replenishing flux

Electrical problems

#	Description
500	Linux recovery failure
501	Can not connect to printer
504	Processing solution doesn’t warm up
505	Linux startup failure

5.2 Corrective actions

003 Paper loading error

1. The head of the paper roll is rugate.
   - Unwind paper and remove paper magazine.
   - Cut the rugate paper head with scissors.
   - Install paper magazine back onto machine.
2. Paper has jammed in the cutter section.

☞ 300 Paper jam in cutter section

008 Cassette not setup

The current cassette has not been registered in **Maintenance**.

- Run **Maintenance**.
- Click **Service**, and then click **cassettes**.
- Click **New**.
- Click the number of the current cassette ID to register the current cassette.

009 Blocked

Replenish tank is low level, computer stop printing to avoid bad print quality.

Add replenish solution to the replenish tanks.

031 No connection with master

This message means no commutations between Linux PC and Master PCB.

1. The processor has not been turned on.

   Press the Drive button to turn the processor on.
2. J15 or J16 plug of the Master PCB is loose.

   Shut down the machine and check the J15 and J16 plug connection.
3. The COM port plugs of Linux PC mother board are loose.

   Shutdown the machine, on the Linux mother board check the COM port plugs connections.

4. Master PCB is broken.

   Replace Master PCB.

032 Tape failure

On Linux LCD panel Press **C** button.

033 Display failure

1. J4 plug (supply power to LED) is disconnected or loose.

Plug in J4 plug.

2. LED has is broke.

Replace LED.

3.20 LED assembly replacement

3. Master D-103 PCB is broken.

Replace Master D-103 PCB.

034 Photo preparation failure

Paper has jam in raiser rack 1 or raiser rack 2.

Shut down machine, carefully check raiser rack 1 and raiser rack 2 and remove paper.

300 Paper jam in cutter section

3.21 Paper jam in cutter operation

301 Paper cannot be cut off

3.21 Paper jam in cutter operation

310 Replenishing pump doesn’t work

1. The power switch of the replenishing pump has been set to OFF.

   On replenishing pump set power switch to ON.

2. Replenishing pump is broken.

   Replace replenishing pump.

3. ACControl PCB is broken.

   Replace the ACControl-D101 PCB

311 Low replenishing flux

1. Replenishing pump efficiency setup is not correct.

2.8 Replenishing system setup

2. Regeneration doses setup is not correct.

2.8 Replenishing system setup

500 Linux Recovery failure

1. The BIOS setting of Linux PC mother board is not correct.

   Configure BIOS of Linux PC mother board.

   3.3 Linux system backup and recovery

2. Scratch on the CD or the CD is dirty.

   Clean the CD.

3. Motherboard model or video card model of Linux PC is not correct.

   The hardware configuration of Linux PC cannot be changed to other models.

4. Linux PC hard disk cable, CD-Drive cable, video card or memory bank are loose.

   Check all these connections.

5. The Linux hard disk or the Linux CD-Drive is broken.

   Replace the hard disk or the CD-Drive.

501 Can not connect to printer

This message usually appears on the Windows PC monitor.

1. The Linux PC has been shut down.

Turn on the Linux PC and wait for Linux loaded.

2. Network connection has been broken off.

   Check network cables and connectors of HUB.

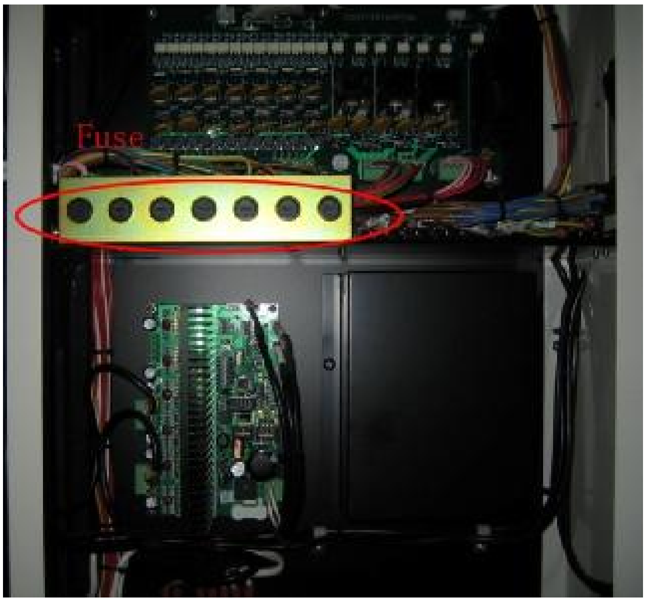
3. IP address or Subnet mask of client PC is not correct.

   Set IP address and Subnet mask of client PC.

☞ 3.4 Client PC setup

504 Processing solution doesn't warm up

1. Fuse of heater has been broken.
   - Shut down machine and remove the back cover of the machine.
   - Check and replace fuse.



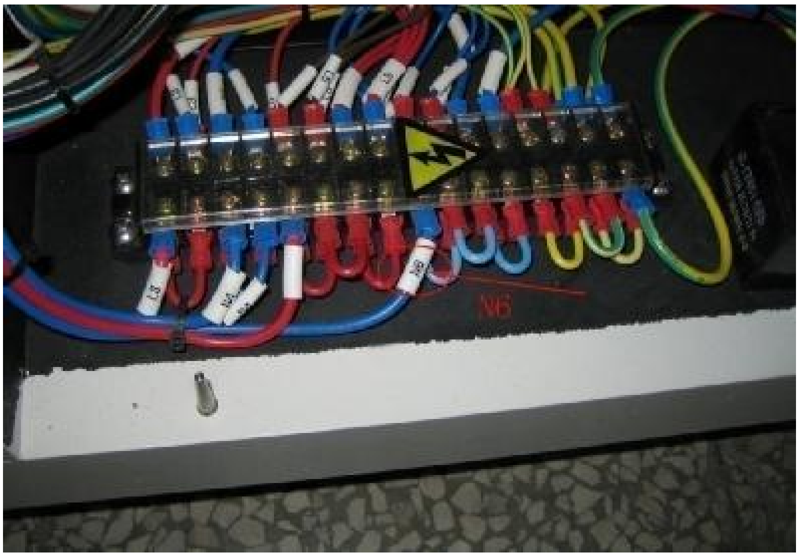
2. Heater is broken.

   Shut down machine, and use a multi meter to test the resistance between the corresponding wire of AC Control PCB J4 plug and **N6** wire.

J5 plug of ACControl PCB	Mark	definition
	CDH	CD heater
	BFH	BF heater
	STB1H	STB1 heater

	STB2H	STB2 heater
	STB3H	STB3 heater
	STB4H	STB4 heater

The N6 wire can be found near the air switch:



If the test value is more than 400ohm then heater is broke.

Replace heater if it is broken.

3. ACControl PCB is broke.

   Replace ACControl PCB.

505 Linux start-up failure

1. PCB and cable connection of Linux PC is loose during shipment.

   Check Linux PC video card, memory bank shall be installed on the main board properly, and the hard disk connection shall be good.

2. Linux PC is affected by moisture.

   Use a fan to dry Linux PC, and restart Linux PC after 15 minutes.

3. Linux main board CMOS data is lost.

   Connect a monitor and a keyboard to Linux PC main board. On keyboard press **DEL** key when starting the Linux to enter CMOS, check the setting according to requirement, and then **save and exit**.

   Replace main board battery if necessary.

☞ 3.3 Linux system backup and recovery

4. Backup data and re-install Linux system and then restore data using Linux recovery CD.

☞ 3.2 Data backup and restore

☞ 3.3 Linux system backup and recovery

700 Photo comes out not dry

1. Working solution has not reached the setting temperature, so that dryer has not started to work.

   Wait for working solution temperature reach the setting temperature.

2. Dryer temperature setting is too low.
   Increase dryer temperature in “**Maintenance** > **Chemical setting** > **Temperatures”**.

3. Dryer temperature is not correct.

   Calibrate dryer temperature by **LabUtil**.

   ☞ 2.4 Temperature calibration

4. Processing solution is dirty.

   Dirty solution could cause sticky photos.

   Clean or replace filters; clean racks and working tanks

   ☞

   - 3.6 Filter cleaning and replacement
   - 3.8 Rack cleaning and examination
   - 3.9 Check and clean working tanks and pipes

5. Fuse of dryer is broken.

   Shut down machine, remove back side cover of machine and then check and replace the dryer fuse.



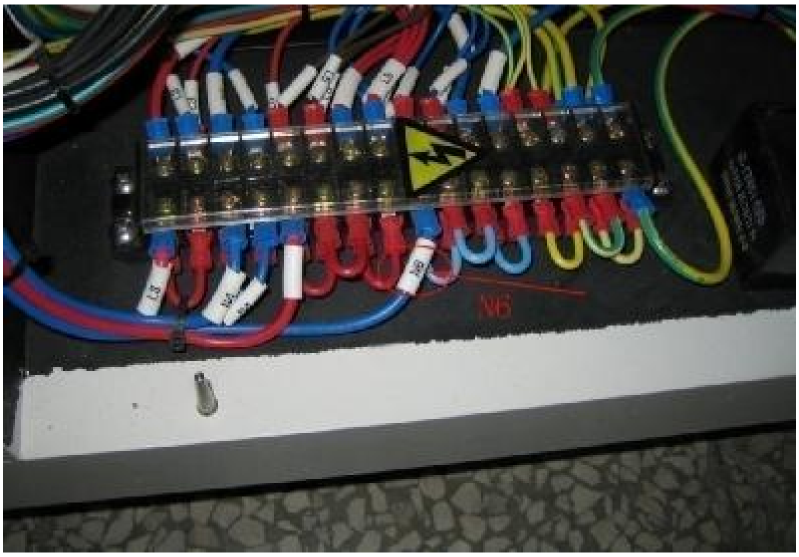
6. Dryer fan is broken.

   Power supply of the dryer fan and main processing motor is parallel connection. When racks are running, dryer fan shall run as well. Otherwise (if no airflow felt in the dryer tank) dryer fan is broken.

   Replace dryer fan.

7. Dryer heater has been broken.

   Shut down machine, and use a multi meter to test the resistance between the **DRTT** wire of AC Control PCB J4 plug and **N6** wire.



If the test value is around 220ohm then the dryer heater is OK.
If the test value is more than 500 ohm then the dryer heater is broken.

Replace dryer heater if it is broken.

8. ACControl PCB is broken.

   Replace ACControl PCB.

701 Paper scratch

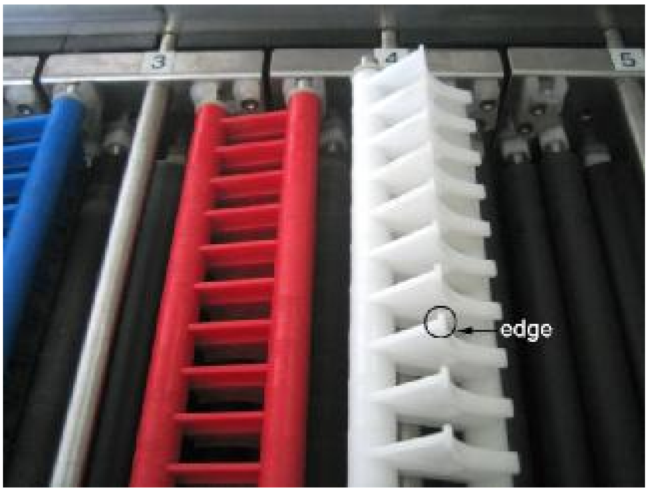
1. Working solution is dirty.

   Clean or replace filters; clean racks and working tanks

   - 3.6 Filter cleaning and replacement
   - 3.8 Rack cleaning and examination
   - 3.9 Check and clean working tanks and pipes

2. The edge of the crossover has been damaged.

   Replace the damaged section of the cross over.



705 Photo comes out dirty

Working solution is dirty.

Clean or replace filters; clean racks and working tanks

- 3.6 Filter cleaning and replacement

- 3.8 Rack cleaning and examination
- 3.9 Check and clean working tanks and pipes

706 Image out of focus

1. Image of the source file is not sharp.

Try to apply 1 or 2 sharpness to the source file by **PhotoSmart**.

2. Lens is out of focus.

   Adjust focus of the lens.

   ☞ Lens focus adjustment

707 Colour noise on photos

1. Machine has not been start-up properly.

   Shut down machine and start-up machine again properly.

   ☞ Chapter 2 Maintenance > Prologue

2. Linux PC video card is broken.

   Replace the Linux PC video card.

708 Strong grid lines on photos

Re-calibrate twister 4.

☞ 2.5 Twister 4 calibration

709 Vertical lines on the photos

Uniformity shall be calibrated when Vertical lines appear on the photos, especially in light or dark area.

☞ 2.7 Uniformity calibration

710 Uniformity of photo is not good

This problem can be identified easily on passport photos.

Re-do Uniformity Mask calibration.

☞ 2.7 Uniformity calibration

712 White borders on photos

1. Redo ABCD calibration for the corresponding format of photos.

☞ 2.2 Exposure centre (ABCD) calibration

2. For 152x102mm or 127x89mm size, if white border still exist after ABCD calibration:
   - Check if paper length is too long.
   - Check double exposure centre.

☞ 2.3 Double Exposure Centre

3．Paper loading is broken.

Replace paper loading sensor.

713 Colour is very different from the monitor preview

☞ 2.9 Colour management-from monitor to photos

717 Paper length is longer or shorter than the setting length of the corresponding format

In **Maintenance** -> **formats**, increase or decrease the format setting length by mm manually, no need to change the format name.

718 Image magnification or scale does not match the monitor preview

☞ 3.19 Image magnification calibration

719 Photo overlapping

1. Springs of the racks are loose.

Replace springs if it is broken.

☞ 3.8 Rack cleaning and examination

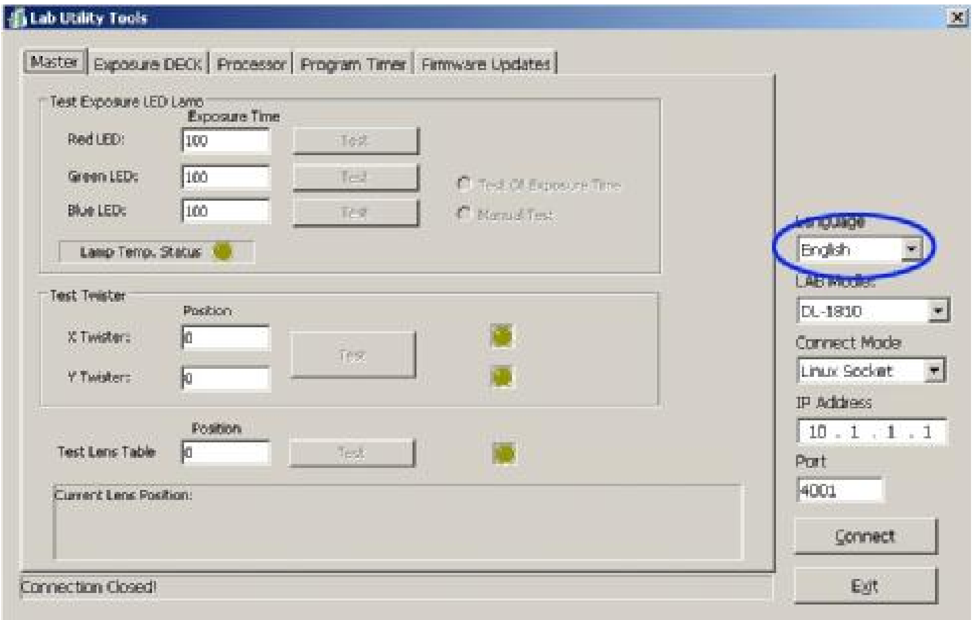
2. Rubber sleeve of the racks is distorted.

Replace rubber sleeve.

☞ 3.7 Rack sleeve replacement

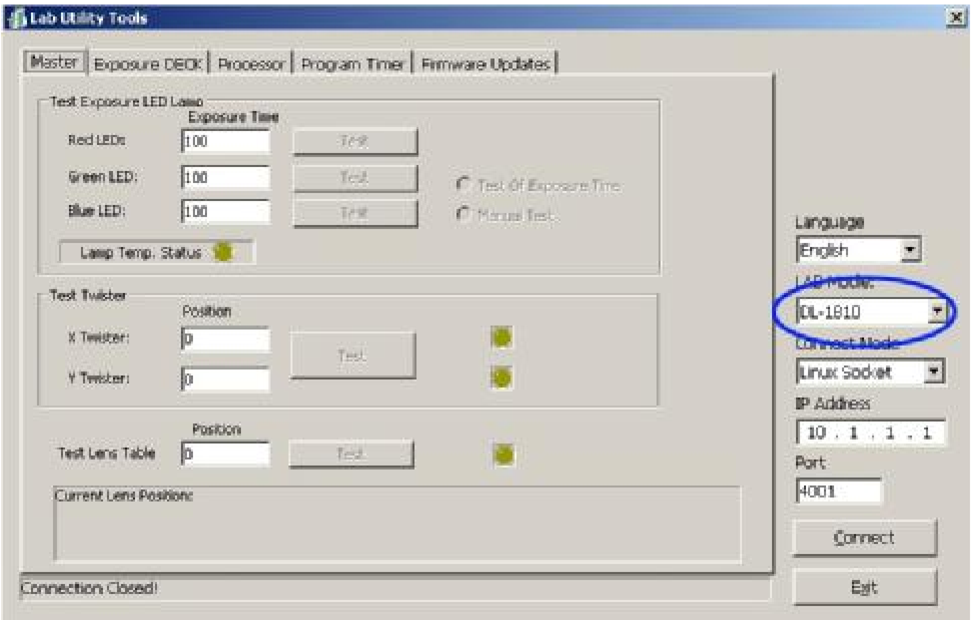
5.3 LabUtil software

Click LabUtil icon to open the software (Usually go E:\DL-2410\LabUtil)

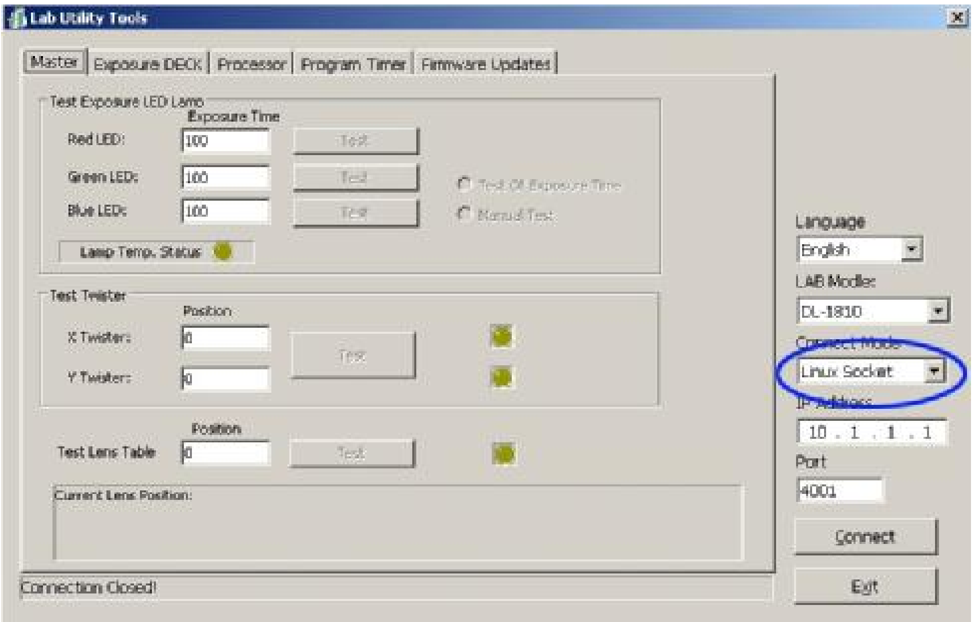


You can select either English of Chinese

You can choose the corresponding model for the machine

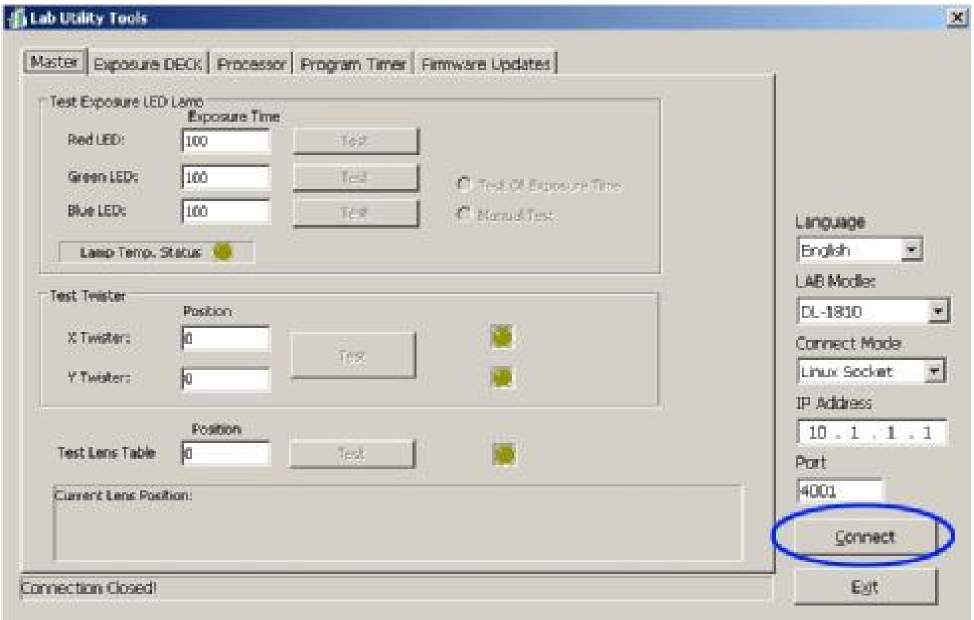


Click button Connect to communicate with the software.

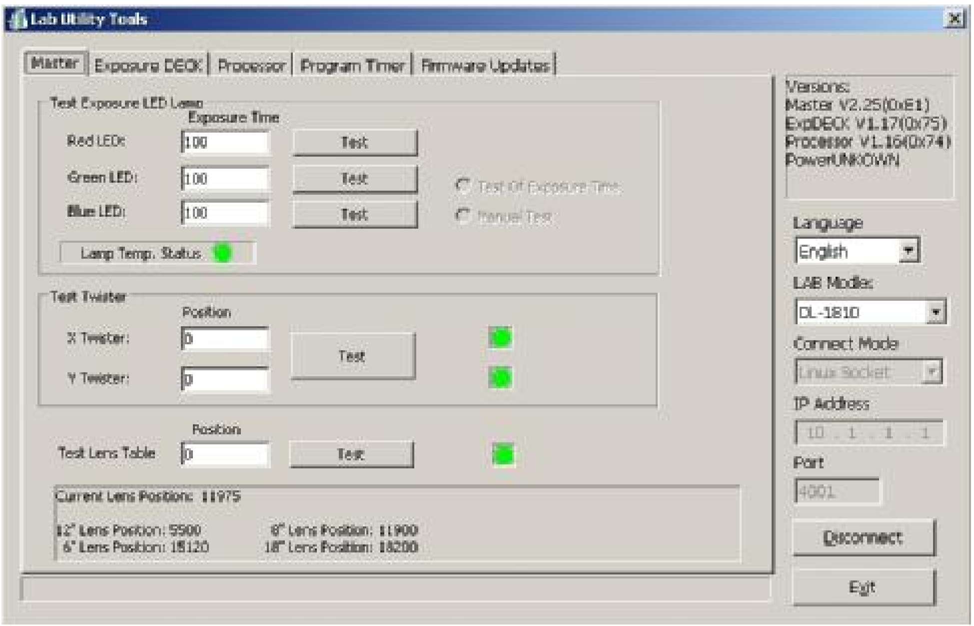


Note: 1. we recommend that you choose Window Socket (or COM1) which you need plug out F15 plug on Master-D103B and insert PCF15 on it. 2. You need re-plug J15 back if the test is finished.

Click button Connect to communicate with the software.



After “LAB connected successful” information is displayed at the bottom bar, Linux system will be shielded while any button of LCD display is being locked.

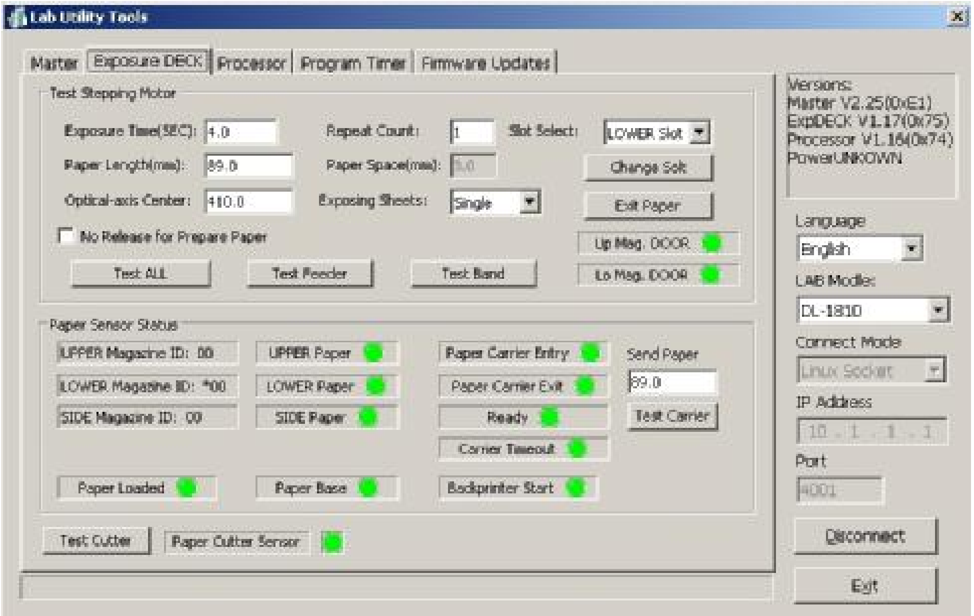


Function of main button Exposure DECK:

- ✧ Exposure Time: Input numbers to simulate exposure LED is not on. Exposure platform pause for a few seconds.
- ✧ Repeat Count: Input the number of Repeat Count.
- ✧ Paper Length: Input the length for current paper advancing
- ✧ Paper space: Input numbers, it is the space between the two pieces of photo, e.g.: 2mm means the space in between photos is 2mm. This button valid only when button Exposing Sheets is selected as double or Triple. The default is invalid.
- ✧ Optical-axis Center: Input numbers and click.
- ✧ Exposing Sheets: Select the sheets to exposure.
- ✧ No Release for Prepare Paper: If this item is selected, the paper will pause on exposure deck instead of going into processor.
- ✧ Change Slot: Select the slot (paper cassette) you want and click button Change Slot.
- ✧ Paper Sensor Status: Test whether the sensors work normally. *01 means the number of current cassette is 01, * means current cassette.
- ✧ Test Cutter: Click this button and the cutter rotate once.
- ✧ Test Carrier: Click this button and the divider runs a while

Sensor indicator description

Type	With paper	Without paper
Correlation	Indicator light red	Indicator light green



➢ Function of main button s of Processor:

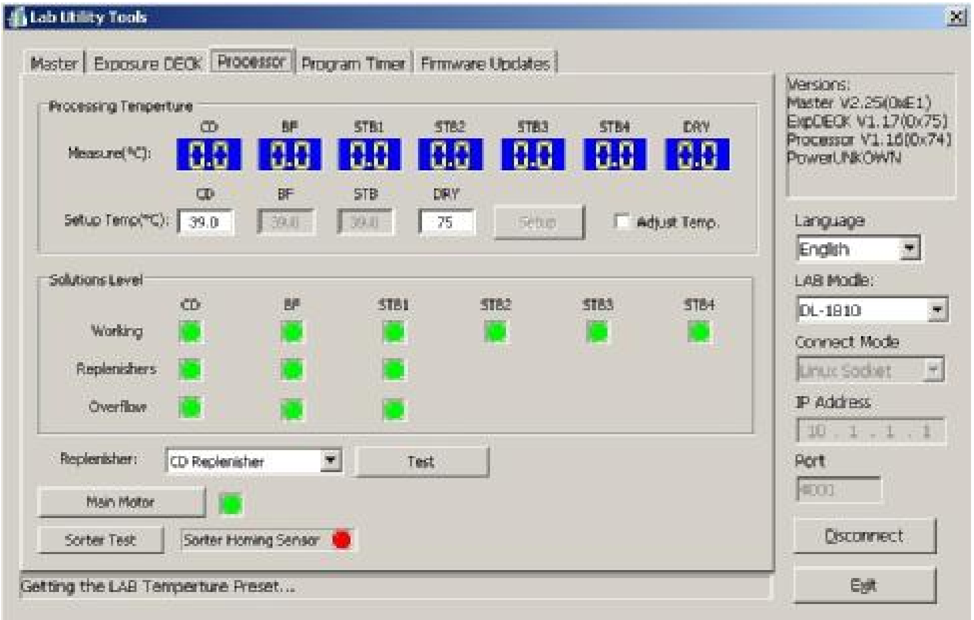
✧ Measure: Display current chemical temperature.

✧ Setup Temp: Input the temperature you want to set, click button Setup Temp.

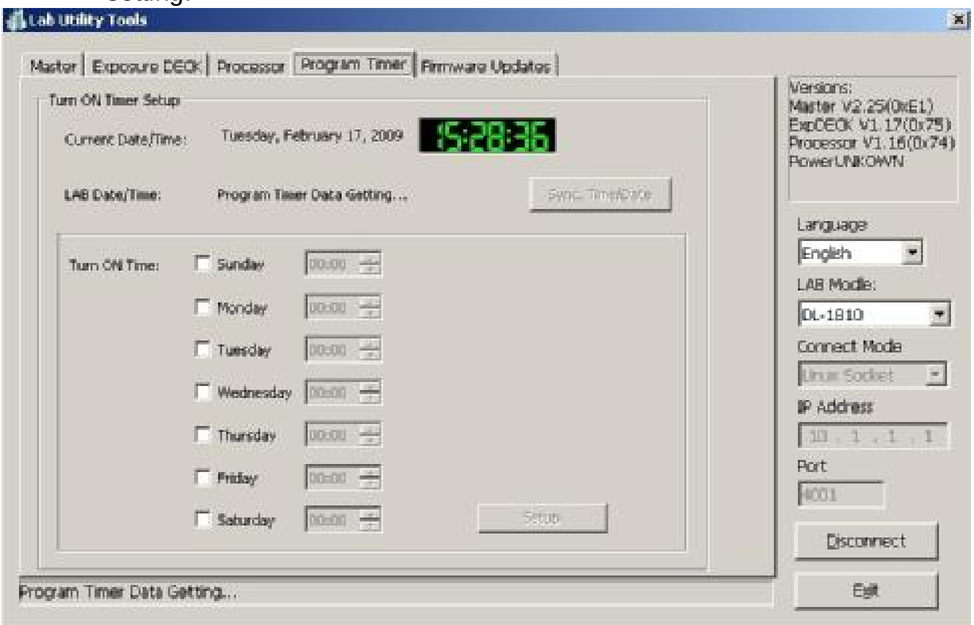
✧ Replenisher: Select the replenisher you want to test and click button Test.

✧ Sorter Test: Click this button to start sorter and Sorter Homing Sensor (indicator is red, when it stops, the indicator is green).

✧ Main Motor: Click this button to start processing motor running within 1 minute while the indicator is red, when it stops, the indicator is green)

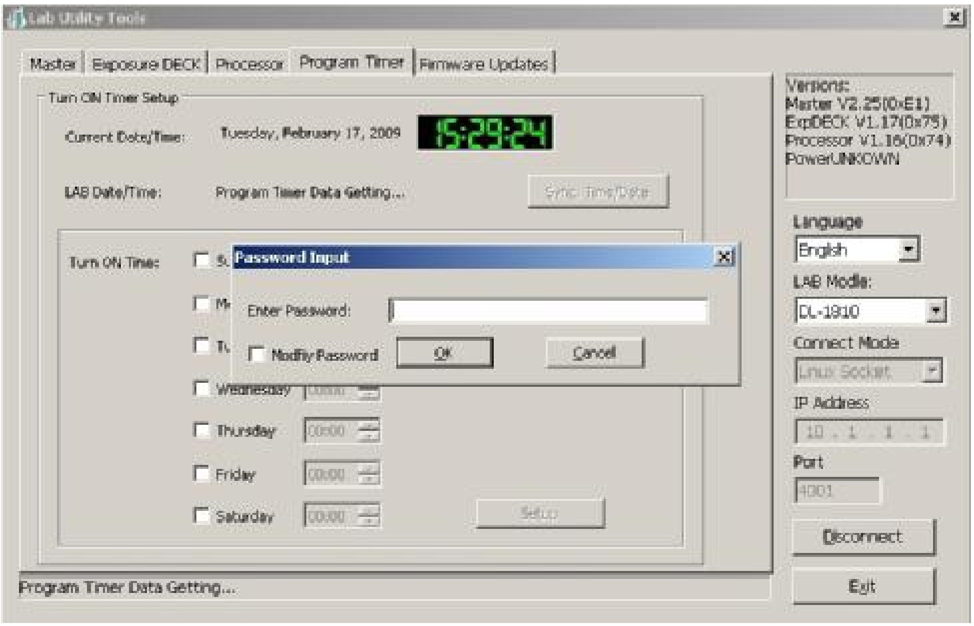


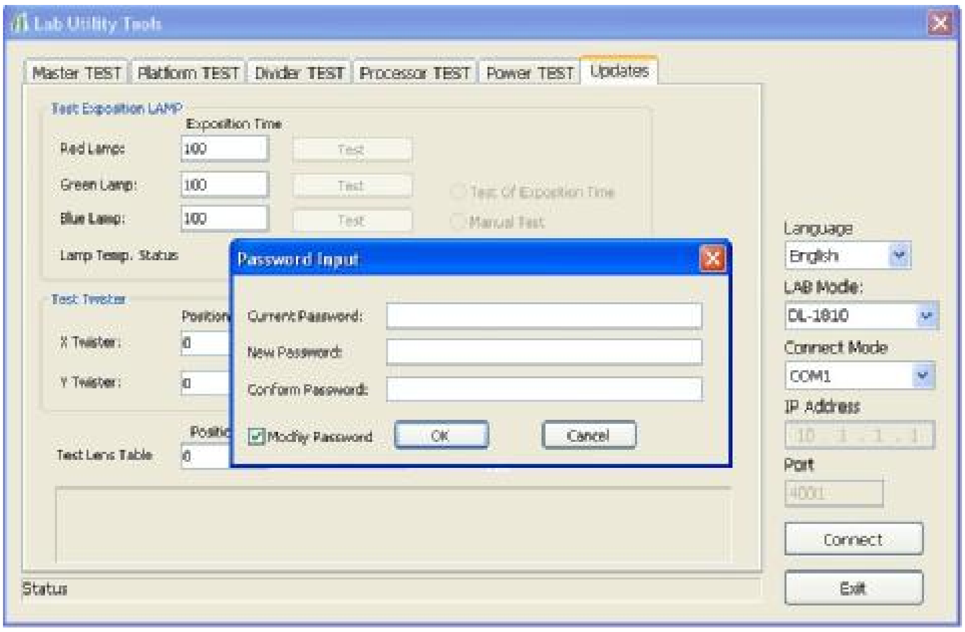
- Function of Program Timer:
  - Current Date/Time: The time of client computer.
  - LAB Date/Time: Time of Program timer.
  - Sync Time/Date: Synchronize the time of LAB Date/Time with that of Current Date/Time.
  - Turn On/Time: Choose the day and input time, click button Setup to finish setting.



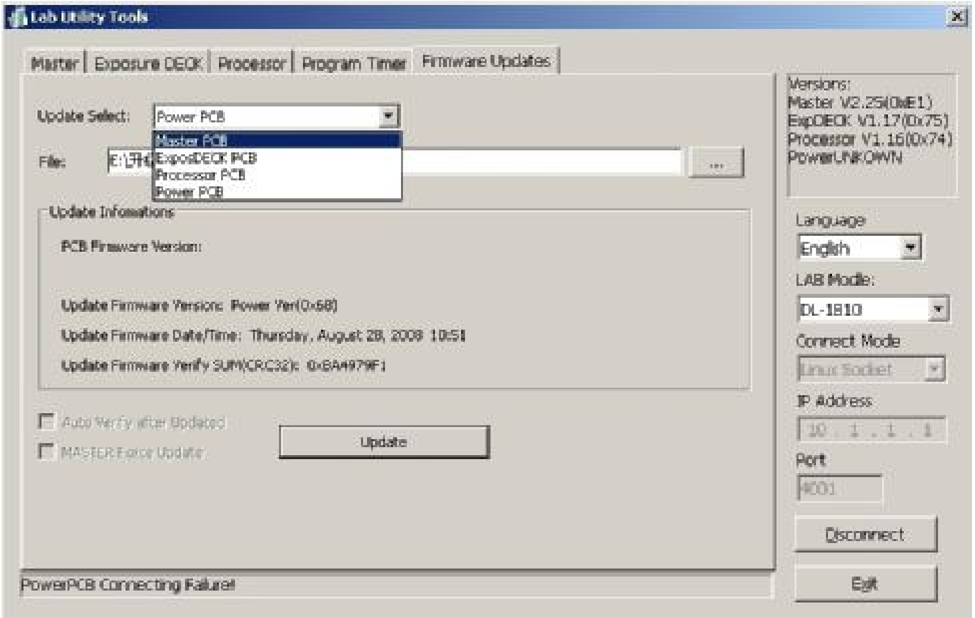
➢ Change password

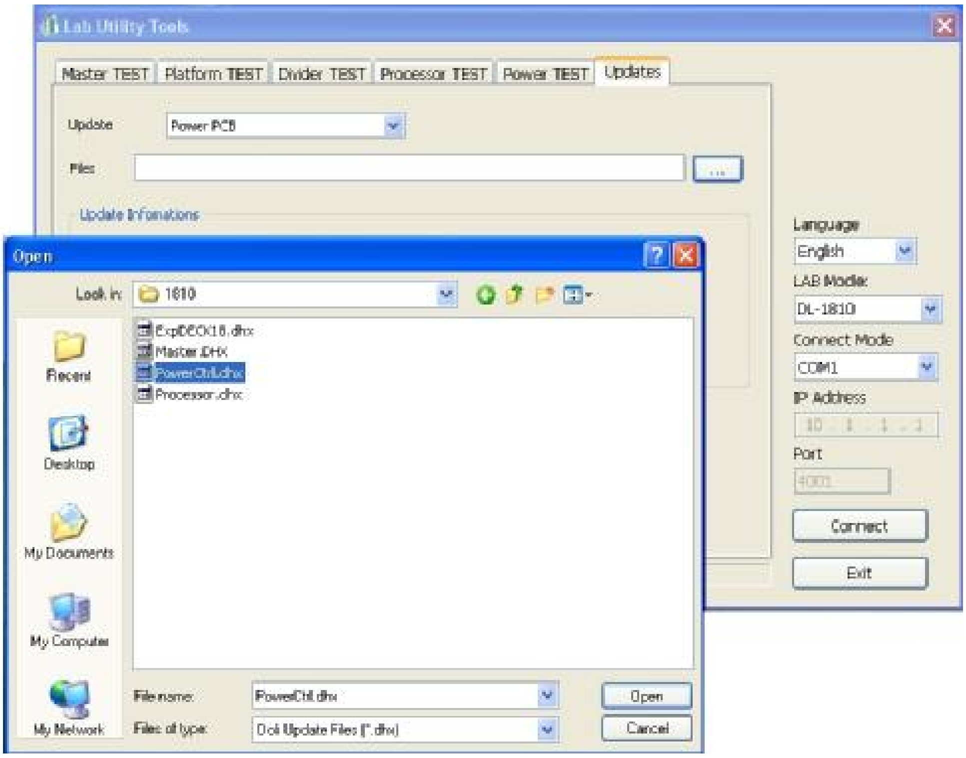
Click Firmware Updates menu, a dialogue box Pass Input will pop up. The initial password is "1234"; you can also customize the password.





- Firmware Updates
  - Select the PCB you want to update





- Firmware Updates: You can check the version of the current PCB firmware and that of the update; you can also check the versions of all current PCB firmware.

Click button Update to update the firmware. (Better to restart the processor button after one PCB firmware finishing updating).

